PACIFIC PULP & PAPER INDUSTRY

Bonneville Dam, to be built at the head of tidewater on the Columbia River, providing tremendous power for natural resource industries. In the background, the timber covered slopes of the Cascade Range, and Mt. Hood.

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Industry

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Pulp and Paper Import Situation Demands Immediate Attention

In the bustle occasioned by the multitudes scurrying to cover under the broad wings of the Blue Eagle, it is easy to lose sight of some of the fundamentals of business recovery which, unless minded now, may later assert themselves in unsavory manner. One of these fundamentals, little discussed publicly and officially, and not yet treated with NRA medicine, but which persists in raising itself in the minds of some industrialists, is "how are the benefits of the NRA program to accrue to domestic industry in full measure, if the major increase in buying power for that industry's products, brought about by NRA activity, goes in payment for products made by foreign manufacturers?"

In other words, if purchasing power in this country for paper products is doubled, how can full benefit of that increased purchasing power be felt by the nation, if most of those dollars are sent abroad for increased pulp and paper imports? As far as this industry is concerned, particularly in pulp and newsprint, increased demand is resulting largely in increased foreign trade on the debit side of the ledger.

The primary purpose of the NRA is to increase domestic purchasing power and increase employment for our own citizens. It is designed to benefit domestic production, not to increase imports. Production in our nation's plants is still very far from normal, yet look at the import situation.

Big Rise in Pulp Imports

In the month of August the U. S. A. had an unfavorable foreign trade balance of $24,000,000, the first unfavorable balance in many a day. Imports of wood pulp have increased tremendously in the past few months. July pulp imports were the largest in any month in years, and nearly three times the tonnage and value of the same month in 1932. Yet August imports jumped still another 25 per cent, reaching nearly 200,000 tons valued at over $6,000,000. Total imports of chemical pulp so far this year have materially exceeded the total for the like period in 1932.

It is significant to note that while we have imported more pulp this year than last, the total value of these imports is several million dollars less. Market values even lower than in 1932 have prevailed on foreign pulp.

How long can our domestic industry continue to operate under the terms of the NRA, while subjected to this uncontrolled competition?

American pulp mills and newsprint mills have felt themselves lucky to have enough orders to be able to operate at about 50 per cent of capacity. At the same time Scandinavian mills have been operating at 75 to 80 per cent, and that reduction has not been through lack of orders, but because of their voluntary agreement to limit production. Their major complaint has been price, and that has been heard chiefly since their depreciated currency advantage has been taken away in part.

The Newsprint Situation

American newsprint production has shown some increase in recent months, but at the end of September, was still 9 per cent below the first nine months of 1932. During the past quarter Canadian production has picked up to such an extent that those mills have actually produced more newsprint to date than they had by the same time last year. It would appear that the NRA has benefitted the Canadian mills more than our own.

It is true that data are being collected on the matter of imports, and that the federal administration gave recognition to the situation in the N.I.R.A. and in recent orders to the Tariff Commission. Mere recognition of the problem, however, does not solve it.

There is no time for an extended study of the matter. The harm is already being done. If the code for the paper industry is to be effective, domestic manufacturers must be given a fair chance to compete in their own markets against foreign producers, otherwise the whole program will break down of its own weight. The great need is for immediate protection sufficient to preserve the industry until a more detailed study can be made.

The industry is assailed on every side. Just as depreciated currency competition bids fair to be solved, up jumps the spectre of increased Russian competition. A recent issues of "Business Weekly" says that "economists believe that the United States might take $60 millions of Soviet wood pulp * * *". Soviet recognition may likely bring greater imports of Russian pulp wood, at a time when millions of cords in our own forests are over-mature and rotting away for lack of commercial opportunity, and our forest industries are tottering.

We still must compete against low wages in foreign woods, mills and shipping lines. A recent official survey of wages paid in the Finnish paper and wood pulp industries, prepared by the Ministry for Social Affairs, discloses that in March, 1933, the average wage per hour in the entire industry was 6:39 finmarks for men and 3:12 finmarks for women, or 16.1c and 7.86c, respectively.

These figures, mind you, are the **average** wage and not the **minimum**, and the equivalent in American money is figured **at par.** At the same time, American mills must pay a minimum wage of 38c and 33c per hour for men and women respectively, in the northern zone. The average in this country runs much higher.

How can these American wages, and resulting living standards, be justified, when there is absolutely no restraint upon imports of pulp and newsprint from Finland and other countries?

Immediate Action Vital

The whole situation is absurd, yet serious. The nation endeavors to increase employment and purchasing power, yet does nothing to protect the industry which offers the best opportunities for expansion in production and labor demand, the industry whose products rank first in competitive imports.

There is even talk of restricting production of American mills. Where is the fairness of restricting the output of our own mills while imports of competing products are unrestricted?

Some protective action must be taken, and taken at once. Otherwise, our forest industries will continue in their increasingly hopeless muddle and their destruction will ultimately be complete.

What Happened at the TAPPI Meeting

Lawrence Killam Elected Pacific Section Chairman; National Fall Meeting To Be Held at Portland, August 28-31, 1934

Marked by the election of Lawrence Killam as chairman for the coming year, a number of excellent thought-provoking papers, a rousing good time, and the presence of the national president, Allen Abrams, the Pacific Section of the Technical Association of the Pulp and Paper Industry held another fall meeting at Tacoma, October 20 and 21.

Allen Abrams may not be as big as some of our homegrown western loggers, but he certainly carries a punch, and he put that punch into this TAPPI meeting. His presence inaugurated a new era of cooperation between the East and the West, and from the sample given at Tacoma, the West liked it mighty well.

A good portion of the members arrived at the Winthrop hotel on Thursday night and were registered, in accordance with the new practise started with this meeting. Others came Friday morning, but were on deck for the opening meeting in the roof garden.

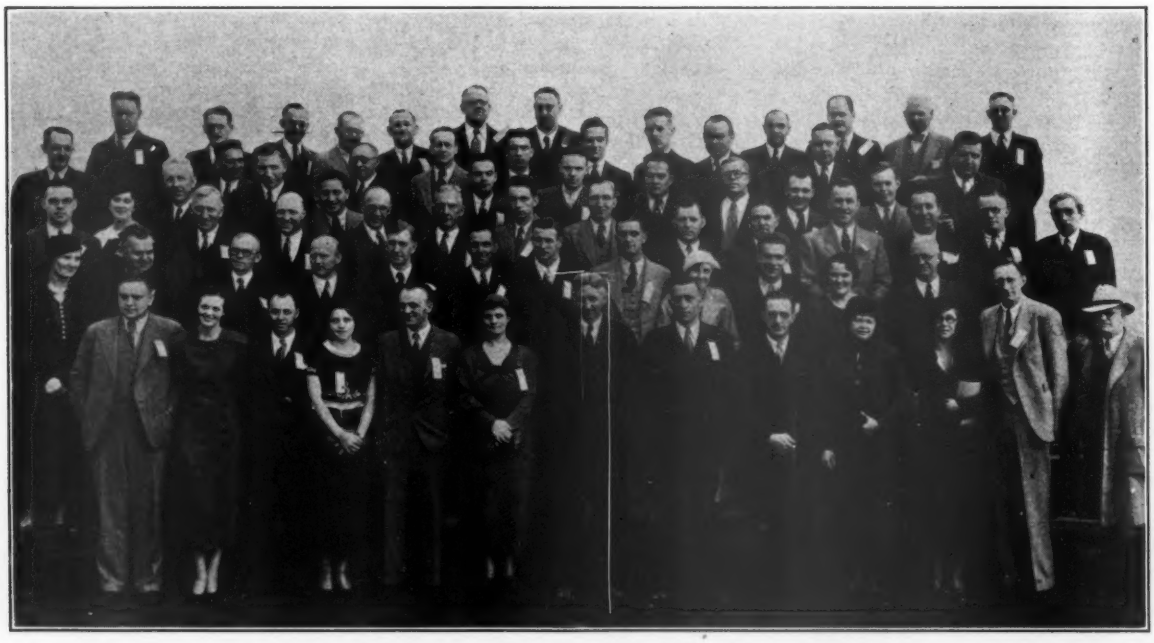
Ralph Hansen, section chairman, was in the chair, and lost no time in introducing the national president, Allen Abrams, who discussed association matters in detail. The Pacific Section, he said, is the first "section" of the national body, and is distinguished for that reason. There are now five sections, of which New England is the newest.

ALLEN ABRAMS
National President of TAPPI

Membership in the organization has suffered but little from the depression, Mr. Abrams said, there now being about 1200 members, only about 150 less than in 1929, in the United States and 20 foreign countries.

Describing the TAPPI literature work of the association, Mr. Abrams referred to the assistance given by all of the industrial magazines, and regarding Pacific Pulp & Paper Industry, said, "It has been a vigorous exponent of this section of the country. A new territory such as this needs an active journal like yours. Pacific Pulp & Paper Industry has done a fine job, and I follow it with much interest.

He spoke of the bibliography, the annual publication of papers, and the technical books of the association. The TAPPI yearbook is relatively new, he said, but is becoming an integral part of the activities. The most recent contribution, the Manual of Standards, he deemed



The TAPPI group at the first session of the Tacoma meeting

LAWRENCE KILLAM
New Pacific Section Chairman

RALPH HANSEN
Retiring Chairman

A. S. QUINN
Re-elected Secretary

the most important development of the last five years.

He told of the committee organizations in the association and of their work in solving the problems of the industry. "It is our intention and endeavor to get as many Pacific Section members on these committees as possible," he assured his listeners.

Mr. Abrams also described the work being done outside the association, such as the support given the Institute of Paper Chemistry, the sponsorship of a fellowship at the Forest Products Laboratory, etc.

After explaining the new plan of having papers abstracted and not read at the meetings in the East, permitting more discussions and a larger number of papers, Mr. Abrams said in conclusion, "I want to assure you of this—that we in the East and Middlewest have not forgotten you on the Coast. We have laid down a rule that the president or some officer such as the secretary, will visit you at least once a year. We are interested in you and want to work with you. We recognize that this is a logical section of the country for major pulp and paper development, and we hold no regional jealousies. We realize that there is no sense in opposing an inevitable development such as that out here."

Albert H. Hooker, Jr., general chairman of the convention, welcomed Mr. Abrams in behalf of Tacoma, and then explained the feature of the program, giving due credit to Dennis Cousins and Fred Shaneman who so ably carried out their parts.

Harold Hauff read the first paper of the session, prepared with R. S. Hatch, discussing their work with the Razek-Mulder Color Analyzer, and illustrating it with lantern slides. The paper is published in full elsewhere in this issue.

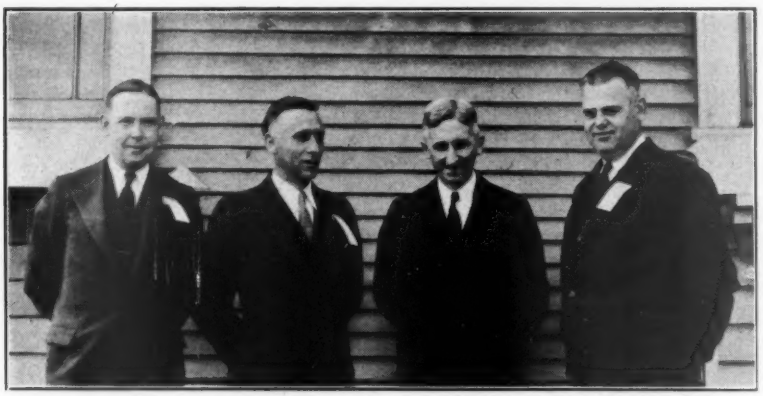
"Digester Circulating Systems" was discussed by A. H. Lundberg, whose paper will be found in succeeding pages.

Upon adjournment the crowd gathered for the convention photograph, and then met with the ladies for a joint luncheon in the hotel. The afternoon was devoted to golf at the Tacoma Golf and Country Club, where the popular spot was on the sixth tee. With his usual attention to detail, Fred Shaneman had provided a keg of beer and a multitude of mugs for those who were dry, and everyone was dry.

The ladies enjoyed a sight-seeing trip through the city in the afternoon, and were guests at a tea at the country club, where the evening banquet was also held.

The banquet was preceded by vocal entertainment from the locker room brigade, and got off to a good

Caught on the Links: At the left (left to right), A. Zimmerman, E. G. Drew, H. A. Des Marais, Al Quinn and Ralph Hansen. On the right, H. T. Fretz, W. E. Caldwell, H. A. Long and B. W. Sawyer.



Myron Black on the left, newly-elected vice-chairman; next, Ralph Hansen, Allen Abrams; and on the right, H. Robert Heuer, convention chairman for the national meeting at Portland in August, 1934.

start with Scott Henderson as toastmaster. He kept things moving along in great style and called on a long and select list of honorables, including Mayor Tennent, Frank Jeffries, Ralph Shaffer, Ralph Hansen, Ray Hatch, Dr. H. K. Benson, Dennis Cousins, Ben Larrabee, Dr. Stafford and Bob Heuer.

The main speaker of the evening, of course, was Allen Abrams. "This is my first trip out here," he said, "and my first opportunity to see some of your fine timber and mills. I have never seen finer timber nor finer mills. The construction of your mills is as near perfect as can be. You people are now in the field, and we in the East and Middlewest are anxious to see you in the field along with us in the future."

Speaking of the developments in the southern pine field, Mr. Abrams said this district will have to be reckoned with in the not far distant future, and counselled, "I believe that we should devote our energies toward the development of our own section of the country, and not worry too much about what is happening in other parts."

To Dennis Cousins fell the lot of distributing the golf prizes, and a goodly number of them there were. The winners, their prizes and their qualifications were as follows: A. Dripps, duffle bag, winner B. B. tournament; Ralph Hansen, 6 golf balls, Most number of 6's on first 9; Fred Shaneman, putter, least number of putts; Al Hooker, No. 5 iron, greatest number of birdies; Ralph Shaffer, 12 golf balls, most pars; Carl Fahlstrom, jacket, longest drive No. 9 hole; Kenneth Hall, driver, longest drive on No. 16; Doug Meyers, niblic, closest to pin on No. 6; F. N. Hicks, No. 6 iron, closest to pin on No. 11; D. E. Cousins, No. 4 iron, only birdie on No. 16; F. Schmitz, box of candy, first par on No. 1; Arthur Zimmerman, 3 golf balls, highest score on second 9; Lawrence Killam, 4 golf balls, highest score on first 9; Mayor Tennent,

The two "big shots" from Longview, Bob Heuer and Art Zimmerman, otherwise known as the beef trust.

1 golf ball, hole in one on putting green; Leo Friedman, one golf ball, best practice putter; Harold Fretz, 2 golf balls, eleven strokes on No. 1; Jack Lamb, 3 golf balls, 4 strokes on No. 18; E. J. Hayes, 1 golf ball, second par on No. 1; F. E. Jeffries, 1 golf ball, only paper distributor present, and Harold Hauff, slicker.

On Saturday morning the concluding business session included a paper "The Bone Dry Weights of Some Northwest Pulps," by W. L. Beuschlein and V. C. Ives of the University of Washington. Because of the large number of tables and charts accompanying it, space does not permit its publication in this issue, but it is hoped that it may be carried in a later number.

Kenneth Shibley presented a discussion of "Scientific Boiler Feedwater Conditioning," which is published elsewhere in this issue.

The report of the nominating committee, Myron Black, Earl Thompson and Kenneth Hall, and the ensuing election swept into office by unanimous vote, the following: Chairman, Lawrence Killam; vice-chairman, Myron Black; secretary, A. S. Quinn. Mr. Quinn accepted the post of secretary again upon the insistent demand of TAPPI members. The election of new officers at this meeting was deemed especially important in view of the forthcoming national meeting at Portland August 28-31 next year.

Mr. Killam's election as chairman is of particular interest, not only because he is a leader in the industry, but also because he heads a British Columbia mill.

After another group luncheon, the members took advantage of Saturday afternoon to attend the football game, and to visit industrial plants, including that of the Hooker Electrochemical Co.

The meeting wound up in a blaze of glory Saturday night with a dinner dance with Ralph Shaffer as toastmaster.

Why the sixth tee was so popular

The Razek-Mulder Color Analyzer and Its Use For the Measurement of Color in the Pulp and Paper Industry

By
R. S. HATCH and H. A. HAUFF
Research Department, Weyerhaeuser Timber Co.

ABSTRACT

The theory of color is briefly discussed and the principles on which the Razek-Mulder Color Analyzer is designed are explained. Photographs of color curves covering a wide range of pulp and paper colors are given to illustrate the range and sensitivity of the instrument.

In Technical Association Papers Series XIV, pages 329 to 330, is a description of the Razek-Mulder Color Analyzer. At that time, little was known of the practical value of the instrument in the pulp and paper industry and considerable time elapsed before it was given a real trial in the field of pulp and paper. Early in this year, one of these instruments was purchased by the Weyerhaeuser Timber Company and has been in continuous use at the Pulp Division Laboratory in Longview.

At the risk of repeating, in a measure, what has already been said on the theory of color and of the instrument, we shall cover this subject as briefly as possible in order to more clearly show the working of the instrument and demonstrate the significance of the readings which it produces.

Color is such a familiar and fundamental part of our daily lives that, like other familiar phenomena, we have some difficulty in arriving at a true mental picture of the subject unless we resort to the basic physical laws which govern the manifestation.

Light is a phenomenon of wave motion and is but a very small part of a great and orderly chain of wave motions which have been divided for convenience into such groups as Cosmic Rays, X Rays, heat, light, electro magnetic waves, etc Each of these groups of wave motions possesses a definite series of wave lengths which distinguish it and which have definite effects on instruments designed for their detection or upon our physical senses.

What we know as visible light is a group of wave motions with wave lengths varying from 400 millimicrons to 700 millimicrons. These two limits of wave length include all of the so-called visible spectrum from violet through blue, green, yellow, orange and red.

All matter in the physical universe is either affected by, or affects wave motion coming in contact with it. As an example: In the case of light, we have the familiar phenomena of absorption, reflection and refraction, all of which have a bearing on the question of color.

When white light, consisting of a mixture of all the spectral colors, falls on an object, it may be specularly reflected as from a mirror or from a polished metal surface; or it may be diffusly reflected as from pulp, rough marble, or a magnesia block. In the latter case, we get the sensation of white. On the other hand, all the light falling on a surface may be absorbed and none reflected. In this case, we get the sensation of black. Now if white light falls on an object and certain parts of the spectrum are absorbed while other parts are reflected, we get a

Presented at Fall meeting of TAPPI, Tacoma, Wash., October 20-21, 1933.

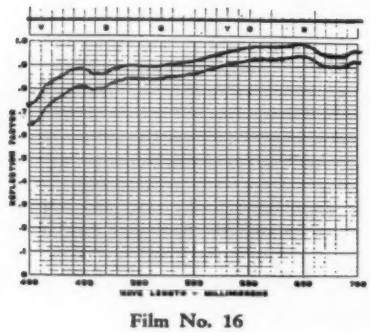
DENNIS COUSINS

FRED SHANEMAN

The TAPPI Convention Committee: A. H. Hooker, Jr., general chairman, in center

sensation of color, depending on what parts of the spectrum are reflected. For example: A substance which absorbs all parts of the spectrum, except red, we call red because the red part of the spectrum is the only portion reflected. This red color may, of course, be modified due to some degree of reflection of the other spectral colors. For example: If white light falls on an object and 50 per cent of all the incident spectral colors except red is reflected, while at the same time all of the red is reflected, we get the sensation of light red or red mixed with white. It will be readily understood that the gradations from total reflection to total absorption of one or all of the spectral colors may reach an infinite number and thus the verbal description of a color becomes impossible. This difficulty has in the past given rise to many descriptive terms such as, intensity, tone, hue, depth, chroma and many others, depending on the particular psychological concept of color.

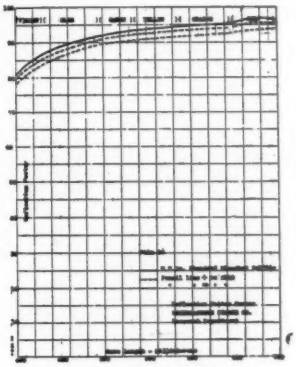
Obviously, the only correct means to describe a particular color is in mathematical terms, showing the percentage of each spectral color reflected. Up until the practical development of the photo-electric cell, the optical spectro photometer was the most accurate means of measuring color. In this instrument, light was reflected from a standard white through a series of arbitrarily chosen color filters and through adjustable diaphragms, or like means, a semicircular field was matched with a semicircular field of light from the sample under examination. This method introduces the element of human judgment and individual sensitivity to certain wave lengths. In general, the human eye is the most sensitive to green and less sensitive to the other spectral colors. While the optical spectro photometer is a reasonably accurate instrument for the mathematical expression of color in the hands of one experienced operator, it does not lend itself to general use without introducing the human element of judgment or sensitivity.



Film No. 16

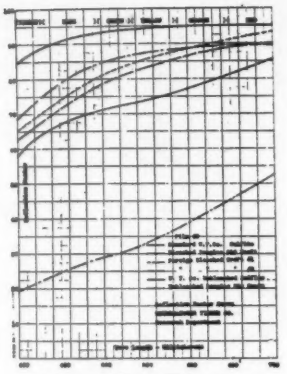
The perfection of the photo-electric cell has placed in our hands a tool with which it is possible to do away entirely with the factor of judgment, as it has been demonstrated that the intensity of the current output of a properly selected photo-electric cell is proportional to within an accuracy of 0.1 percent to the intensity of the incident light.

In order to measure or analyze a given color with the aid of the photo-electric cell, we must first measure, or analyze, the light reflected from an object which has a minimum absorption for the incident light throughout the spectrum. If this reflected light is broken up into its spectral colors by means of a prism, we may then cause these spectral colors to fall, in regular order, on a photo-electric cell and measure the current generated by each wave band successively. In this manner, we may obtain a curve representing



Curves from Film 26

the color or total diffuse reflection of the incident light from the standard throughout the entire spectrum. We may then replace the standard white object with the substance whose color we wish to measure and repeat the operation. The second curve which we obtain will be equal to the standard or lower than the standard throughout its length depending upon the amount of incident light reflected or absorbed respectively. For example: If we wish to measure the color of a green object, we will first produce the curve of the white standard which, if conditions are right, should approach a straight line. When the white standard is replaced by the green object, we will find that the curve representing the green will be comparatively low in all parts of the spectrum except the green where it will rise to a peak. We shall then, by comparing the readings of the white standard at each wave band with those of the



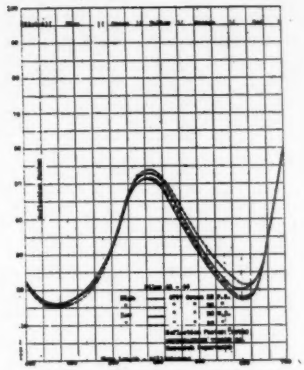
Curves from Film 69

sample at the same intervals, obtain what we call the reflection factor for the sample under examination at each wave band. By drawing a line through the reflection factor points plotted on suitable cross section paper, we obtain a curve which we term the reflection factor curve for the sample.

In the foregoing discussion, we have given the theory upon which the Razek-Mulder color analyzer is designed. Without going into the detailed construction of the instrument, we shall describe briefly how it functions. The analyzer produces a reflection factor curve in the form of a photographic record, or it may be used as an indicating instrument for obtaining reflection factor values at any chosen wave length.

The sample to be tested is placed over an opening where it is illuminated by a powerful source of light. Light reflected perpendicularly from the sample is admitted to a spectrometer from which it emerges, separated into its various wave bands. Each of these wave bands is then allowed to pass into a photo-electric cell and the feeble current given out by the cell is amplified about a million times by means of a special vacuum tube amplifier. The amplified current is indicated by a galvanometer reading whose position can be noted on a scale in the front of the instrument and at the same time recorded on a photographic film. By turning a small crank, different portions of the spectrum are successively admitted to the photo-electric cell until the entire spectrum has been scanned. Automatically, at the same time, the photographic film is moved through the appropriate distance. Coordinate lines and an identification number are also printed on the film before it is removed for development.

The unit for illuminating opaque samples consists of a number of small bulbs, forming a fairly complete hemispherical surface. The



Curves from Films 45 - 46

plane surface of the hemisphere, or top, has at its center an opening over which either the standard white or the sample to be tested may be placed. With the lights on, the hemispherical source of light gives intense illumination from many directions and in this manner, two serious difficulties are avoided. The one is irregularity of surface, the other finish or polish. In the case of irregular surfaces, no shadows are caused because the light comes from so many directions. With polished surfaces, there is such a low specular reflection that its effect may be disregarded. Direct light from the bulbs is eliminated by means of a cylindrical trap covered on the inside with black velvet.

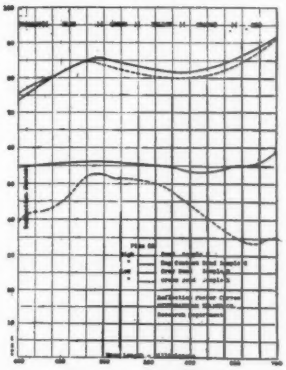
Obviously, the light output of any lamp depends upon the voltage applied to the lamp and varies as the voltage varies. For purposes of setting the voltage at the proper value for both the standard white and the test sample, and for showing whether or not the applied voltage changes, a recording and indicating voltmeter is included in the instrument.

The interpretation of the curves produced by this instrument resolves itself into a study of (1) peaks in some particular wave band indicating the nature or hue of the color, (2) the general position of the curve in the reflection factor scale. This means that as the position of a curve of a given shape approaches 100, the color becomes lighter, or, in other words, approaches a tint. As the position of the curve approaches 0, the color becomes darker. A horizontal line parallel to the 100 line and between 100 and 0 represents a pure gray which will be increasingly darker as the line approaches 0.

Aside from substantially 100 per cent reflection from such substances as a magnesia block, we meet with very few instances of real white. Bleached pulps and so-called white papers approach white, but are really yellowish, reddish or bluish tints. Pulp mills generally use the color wheel method for checking the color of their product. The method of making these color wheels is well known. The chief criticism of the completed wheels is their lack of uniformity and the difficulty experienced in making two lots of wheels alike, as there is a tendency for the chromate soluton to creep to the surface and the same color quality in plaster of paris is not easily duplicated. These wheels are graded in arbitrary steps from a nearly pure white to a decided yellowish tint and a sample of pulp is given the number grading of the wheel whose color it most closely approaches.

We continue to use the color wheels as a practical method of grading, but we check our results daily with the color analyzer.

In order to show the possibility of the instrument, we are giving some of the results obtained in our work with it. As previously stated,



Curves from Film 52

the machine produces either a visual or photographic reading of the color. For most purposes where exact results are desired throughout the spectrum, the visual reading is of little value except as an indication that the instrument is functioning properly. The photographic record is, in the first place, a permanent record of the color under examination; and, in the second place, records small differences in color which can be analyzed at leisure. With a permanent photographic record of a color, it is evident that permanent standards may be set up without regard to the inevitable color changes which take place in stored color samples and regardless of these changes, new samples may always be referred to the standard originally adopted.

The first illustration, film No. 16, from our records is a typical pulp color curve. The top curve is the magnesia block. This is not a straight line at 100 reflection factor on account of the photo-electric cell characteristics and slit openings; but regardless of its position, at a given wave length, it bears a fixed relation to the sample under analysis.

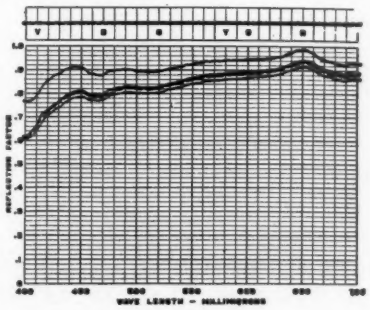
The bottom curve is really two curves which are superimposed. These two curves represent parts of the same sheet of pulp, one rough off the machine, the other rendered perfectly flat by pressing in a hydraulic pulp press against a sheet of polished stainless steel. This film indicates the lack of surface effect on color readings.

Film No. 26 is another series of standard pulp color curves. Again the top line is the magnesia standard. The next line below (dotted) is the same pulp with a light pencil line drawn across the slit to show the effect of black dirt in the field. Note that the entire curve is lowered parallel to the curve for the unmarked sample showing the effect of the addition of black. The bottom curve is the same pulp with the pencil line parallel to and nearly over the slit showing the effect of adding more black.

The next illustration is the true reflection factor curves developed from film No. 26 by dividing the readings of the magnesia standard curve at each 10 millimicron intervals into the readings of the three curves at like intervals and plotting the resulting figures.

Note that the standard bleached sulphite curve is low in the blue and violet end of the spectrum and is nearly horizontal for the balance of its length. This is characteristic of all bleached pulps, the main difference being the position and slope of the curves in the blue and violet end.

The next illustration is the developed curves of film No. 69, showing the range of the instrument on pulp. The top line is our standard bleached pulp. The second line is a domestic kraft bleached in the laboratory; the next two lines are foreign bleached krafts. The next line unbleached sulphite and the



Film No. 26

bottom line is unbleached Douglas fir kraft.

The possibilities of the instrument for measuring the colors of paper are best illustrated by the following series of curves. Films No. 45 and No. 46 are the plotted reflection factor curves of two samples of green cover paper taken from two different rolls in the run. The top dotted curve and the top solid curve show the difference between the felt sides of the two rolls while the bottom dotted and bottom solid curves show the difference between the wire sides of the same rolls. The difference, in this case, between the wire and felt side of the same roll is much greater than the difference between corresponding sides of the different rolls.

On film No. 52 are curves of two white bonds, a gray and a green. The gray and the green are about the same depth of color, but the gray is a very good example of a pure gray, being nearly a horizontal line.

We believe that the illustrations we have given show the wide range of usefulness of the instrument. We have tested its accuracy in many ways and have always found that if the machine is in electrical balance, and properly adjusted, we may expect results of the highest accuracy.

Bonneville Dam Presages New Era of Northwest Industrial Development

Another step in the development of a great industrial empire in the Pacific Northwest has been assured of consummation by the approval of the public works administration for construction of the Bonneville dam on the Columbia River.

This is the second power project authorized this year for America's greatest power stream. Several months ago construction of the Grand Coulee dam was approved and $63,000,000 allotted for that purpose. The Bonneville unit will cost $31,000,000. Thus we have two colossal power dams, one at tidewater on the Columbia, the other some 400 miles above it at Grand Coulee. Between the two lies the Rock Island dam near Wenatchee, owned by the Puget Sound Power & Light Co. These three projects together will produce a tremendous amount of power without having really touched the vast resources of the Columbia.

Ultimate Power 450,000 Kw.

Bonneville dam will be located at Bonneville, Oregon, about 40 miles east of Portland. It will be 72 feet high above sea level, the actual height being about 62 feet above the river. The first installation will produce 90,000 kilowatts from two units. Complete development will be undertaken gradually as power demand increases, until the full potential power of 450,000 kilowatts is being produced at the dam.

The structure will consist of five links, a spillway dam from the Washington shore to Boat Rock in the river; a spillway dam from Boat Rock to the head of Bradford Island; a deck dam from the head of Bradford Island to its summit; a dike dam from the summit of the island to the west or downstream end of the island ;and a powerhouse dam from the west end of the island across the south channel to the Oregon shore, where it connects with the navigation locks. Reference to the photograph on the front cover of this issue will illustrate these links.

Construction is expected to start before the first of the year, and to be complete by June 30, 1935.

Site Combines Advantages

According to estimates by engineers, the cost of power generated here will be approximately 1.38 mills per kilowatt-hour. It is believed that the cost of power at this site will be as low or lower than at any other major dam in the United States.

Added to the advantage of cheap power is the fact that the site at Bonneville is said to be the only great source of power at tidewater in the world. Shipping facilities direct to the dam site will be excellent. A 12-foot channel is at present available, and it can be deepened at little expense to accommodate sea-going vessels.

The Columbia is one of the few rivers in the United States which is never short of water. Its flood stage is in the summer when most other streams are low. Further, the gigantic reservoir to be provided in Grand Coulee will store sufficient water to take care of all water requirements during low water, and will control waste from floods.

Thus there will not only be plenty of power throughout the year, but also a constant water supply for industrial plants.

The natural resources which form the backbone of Northwest industrial life are abundant adjacent to the power site. This is particularly true of timber for pulp and paper manufacture. In addition, Bonneville is within economical power transmission distance of most industrial regions in western Washington and Oregon.

The sum total is a tremendously powerful combination of plentiful low priced power located at tidewater, furnishing sea-going transportation facilities, constant water supply, and readily available supplies of timber.

The possibilities for the manufacture of pulp and paper were given special cognizance by General Charles H. Martin, Oregon representative in Congress, who was instrumental in obtaining authorization of the project. When asked how the power will be used, General Martin replied that the development of natural resources and the location of new industries will result.

Sponsors Expect Pulp Mills

"We do not expect to interfere with the distribution of power by local interests," he said. "We will locate paper and pulp plants and other large users of power, and stop removal of American plants to Canada and other countries."

In a statement to Pacific Pulp & Paper Industry, General Martin said, "The low cost power that will be available from the Bonneville dam presents tremendous possibilities for industrial expansion in the Northwest. Not only will this power be plentiful and extremely low in cost, but will be available within short transmission radius of our greatest natural resources and close to industrial sites with splendid ocean shipping facilities.

"The natural outlet for Columbia River power will be in those natural resource industries peculiar to the Pacific Northwest, among which are pulp and paper, electrochemical and metallurgical industries, all of which are largely dependent on cheap electric energy.

"Just as the construction of the transcontinental railroads brought to the Northwest industrial expansion which now supports them, so will the development of Columbia River power bring new plants to use the power.

"We particularly anticipate the enlargement of the pulp and paper industry here by the establishment of many new plants. The combination of our extensive timber stands, adequate water supply, shipping facilities and cheap power will make it possible for Pacific Northwest mills to supply an increasing proportion of our tremendous domestic market for these products, which now is so largely dependent on foreign manufacturers.

"The future of this industry on the Coast is exceedingly bright."

The importance of electric power to the pulp and paper industry, and of the industry to the utilization of developed power, is brought out in the Columbia River report No. 308 by Army engineers.

The report includes the pulp and paper industry as one of major importance in considering probable future industrial power needs of the country, pointing out that in total installed electrical output the industry is exceeded only by steel works and rolling mills.

The installed horsepower capacity of the industry totals 2,700,000 h.p., about 62 per cent of which is electric. In 1929, newsprint production in the United States alone required almost 2,000,000,000 kilowatt hours of energy, and if all newsprint consumed had been produced here, the power consumption would have been more than 5,000,000,000 kilowatt hours.

Mechanical pulp requires approximately 1,280 k.w.hr. of electric energy per ton, the report states, and newsprint about 1,340 k.w.hr. Other types of pulp require 200 k.w.hr. or less of mechanical power.

Inasmuch as the pulp and paper industry uses two-thirds of the production of chlorine, and many other materials such as caustic soda which are produced by electrical processes, the industry holds added importance to the consumption of electric power.

Thus the development of the great reserves of hydro-electric power in the Pacific Northwest where such a large proportion of our remaining timber stands exist, is of transcendant importance to pulp and paper manufacturers, holding forth as it does a brilliant future for the western industry.

Bonneville dam constitutes one more link in the chain of irrefutable evidence pointing to the Pacific Coast as the nation's major center of pulp and paper manufacture in the future.

DIGESTER CIRCULATING SYSTEMS

By

A. H. LUNDBERG

Representative of Chemipulp Process, Inc.

What is it that in a sulphite mill is referred to as "circulation"? A layman listening to conversations between sulphite men, be they cooks, helpers or managers, might get the impression that here we have to do with something mysterious, a force unknown to all and sundry, uncontrollable and temperamental. If you happen to be in favor and the pulp is good, then you have "good circulation", but if the imp is in a nasty mood, the pulp is sure to grade off, or the screening high, then you have "poor circulation". This temperamental little imp seems to have existed and played its little tricks ever since the sulphite pulp processes came into commercial use back in 1874. Many a sleepless night has been spent in figuring ways and means to subdue the little devil, but, alas, he is still with us, playful as ever.

Putting jokes aside, what really bothers us in cooking sulphite pulp is not exactly what the word "circulation" implies. Nobody believes that during the cooking operation the true digester content, chips and all, circulates around inside the vessel. The whole story is that we require a certain temperature to get the desired chemical reaction to take place. The removal of lignin and the rate of its removal is in direct proportion to the temperature. The proper temperature for a certain length cook was learned through years of experience, and we know that below 100 degrees C. there is hardly any removal of lignin or at least too slow a removal for economical use. As we increase the temperature, the rate of lignin removal, according to Miller and Swanson, doubles for each 10 degrees C. rise. Thus, if it takes 24 hours to cook at 110 degrees C., it will take 12 hours at 120 degrees C., 6 hours at 130 degrees C., 3 hours at 140 degrees C., etc.

We are using large vessels for cooking sulphite pulp, and the reason therefore is primarily that the cooking time is relatively long (the sulphate mills with cooking times only fractions of ours are usually using smaller digesters), and the difficulty lies in getting a uniform transfer of heat in these vessels.

Immediately a digester is filled with chips and acid and the cover bolted on, steam is turned on into the botom of same and that is that. We keep on steaming and relieving according to a certain schedule for a certain number of hours and then we blow off the mass to the blow pits, patting ourselves on the back if the pulp is good. If it is not up to grade, we shrug our shoulders and say "poor circulation" and let it go at that.

As mentioned before, the rate of lignin removal is constant for a certain temperature and it is therefore absolutely necessary to have the same temperature in every spot of the digester if we are to expect a uniform progress of the cook and uniform pulp. To create such a condition under the old method of steaming or heating we realize is impossible, because we, when directly steaming a digester, depend on the unalterable law that liquid warmer than that surrounding, rises upward.

As soon as the steam is admitted, a certain part of the acid in the cone is heated. This acid, aided by the impact of steam and evolution of gas, begins to rise, which motion in

Presented at Fall meeting of TAPPI, Tacoma, Wash., October 20-21, 1933.

turn necessitates a motion downwards somewhere else.

To get the acid solution to circulate we are consequently dependent on different temperature zones without which there would not be any circulation or heat distribution at all. The rate of heat distribution will vary, of course, with cooking time, size of digester and relation of diameter to height.

Cold vs. Hot Acid

Mr. Monnberg in his paper, presented at the Holyoke TAPPI meeting, claims that in the 30-ton digesters he studied with normal cold acid it took two hours for the heat to arrive at the top and at the bottom thermometer four hours. When hot acid is used, the acid moves easier, probably due to lower viscosity. The heat arrives at top in 1½ hours and at the bottom thermometer in 3 hours, even with rates of steaming lower than those for normal cold acid. In smaller digesters these time laps are materially lowered, but in every case there exist pronounced temperature differentials in different parts of the digester. In the beginning of the cook these differentials are quite great. As the cook progresses, the temperature is getting more equalized and ought to, in a normally progressing cook, be negligible by the time steam is shut off.

Bearing these facts in mind, it is logical to conclude that in every direct cook the pulping is completed in a variable length of time and when discharged to the blow pit therefore variable in character.

To get a commercially passable product, cooking by the standard old method with cold acid is therefore not one of the easiest things to do, and a mill that is really producing a uniform product from cook to cook is to be complimented.

Uniformity Difficult to Obtain

The odds against uniformity are very great, because when the gate to the chip bin is open, there is no guarantee that the digester will be uniformly filled and packed. Some zones may be packed harder than others and thus deflect the current direction, slow down the velocity, etc. Many methods have been tried to rectify this condition and to establish a more positive circulation, but until the development of chrome nickel steel alloys all efforts were fruitless. It is, however, possible today with positive forced circulation by means of a pump to materially improve on the old method.

Most of these systems, developed during the last few years, consist of a strainer and a pump with pipe line connections. A heater for indirect heating is sometimes intersected in the pipe line.

We have three distinctly different methods for directing the flow of the cooking liquor.

A. H. LUNDBERG

1. Withdrawal of the liquor from the top of digester and reintroducing same at the bottom.

2. Withdrawal of the liquor from the bottom and reintroducing same at the top.

3. Withdrawal from the middle and reintroducing at the top and the bottom.

The first method is the one generally sponsored in America, and the reason for this is that with our faster cooking and generally green or wet wood we are afraid that the chips would be too tightly packed if the liquor were circulated from bottom to top and interfere with the blow-off. This is, of course, only a theory, as it has not been tried out, and it is generally acknowledged that pulp when thoroughly cooked will blow out without difficulty. Another argument put up in favor of this method is that the warmer liquid introduced into the bottom of the digester and tending to rise to the top would thus accelerate the circulation.

There is, however, one point, perhaps only theoretical, but worthy of discussion.

In an ordinary steamed digester it is the center core that is heated rising steadily upwards and colder acid is coming downwards against the heating point. The temperature therefore is always a few degrees lower in the bottom zones. With forced circulation as per method No. 1 this condition is changed as we will have a continuous upward movement against the strainer all over the digester. Such being the case, we would theoretically still have difficulty with making an absolutely uniform pulp, as the lower zones with their higher pressure due to hydrostatic pressure always would have a higher temperature. This argument is put up by sponsors of method 2 and 3 and sounds logical, but for the fact that the rate of circulation, or turnover, of the liquor has in all systems been set at three to four times per hour. It is known that this rate can be maintained with proper strainers during the heating period. By heating period, I mean the time while the digester is brought to 110 degrees C. to distinguish from actual cooking time with temperatures above 110 degrees C.

Temperature Differentials

Considering a 15-ton digester, holding about 35,000 gallons of acid which has to be heated, there will be a temperature differential in various zones of about 7 degrees C., which differential during the cooking time drops to about 2 degrees C. The greater differential is consequently below the temperature of lignin removal and therefore of minor importance.

The above statement is based on following calculation: Raising the temperature from 30 degrees C. to 110 degrees C. in three hours corresponds to a 27 degree C. rise per hour, which with four turnovers per hour gives a temperature rise of 6¾ degrees C. per turnover. During the cooking stage the temperature is raised from 110 degrees C. to 140 degrees C. in, for instance, five hours, which corresponds to a temperature rise of 6 degrees C. per hour. Assuming that the rate of turnover decrease to three per hour, we have a temperature increase of 2 degrees C. per turnover.

Advantages of Hot Acid

The use of method one therefore has the objectionable feature of a possible 2 degree C. higher temperature zone in the bottom where the highest pressure is prevailing. This, theoretically, naturally makes for an earlier cooked pulp in that zone. In practice, however, I do not believe it amounts to such a great deal, as we have other variables in cooking, such as non-uniform size chips and moisture content liable to cause as much differential.

From the above it can easily be understood that the use of hot acid would be of the greatest advantage. It is possible by the use of accumulators to preheat the acid so that we have an initial digester tempera-

ture before the steaming starts of 80 degrees C. With such a high initial temperature there will be a uniform temperature rise per turnover of 2 to 2½ degrees C. throughout the cook, as during the heating period the temperature only needs to be raised from 80 degrees C. to 110 degrees C. in three hours, which is 10 degrees C. per hour and, with four turnovers, 2½ degrees C. per turnover. During the cooking stage the same temperature rise as we had before, 110 degrees C. to 140 degrees C., holds true, which gave us a 2 degree C. increase per turnover. There are many other advantages derived from using preheated acid, especially as same can be had from the use of the available heat in the digester relief, and consequently a considerable amount of steam is directly saved. It was also, as mentioned before, found by Monnberg that it was easier with hot acid to overcome the inertia of the total acid mass at the start.

An outside heater, placed in the pipe line, gives the advantage of reduced dilution of the acid, but according to some authorities that has the drawback that through the reduced relief there is not sufficient decomposed matter going back into the fresh acid to create the necessary catalytic action, and that due to lack of dilution the sulphonic acids built up during the process of cooking continue to become more concentrated.

Therefore it becomes necessary to add a considerable additional amount of lime in order to prevent the pulp from becoming hydrolyzed by the harsh action of the sulphonic acids. If sufficient lime is added to carry enough combine to prevent the foregoing condition, the sulphur consumption will necessarily immediately be increased. Even with an outside heater the before-mentioned temperature differentials prevail and the advantage of preheated acid is unquestionable, besides making for reduced size heaters.

The second method, withdrawal of liquor from the bottom and reintroducing same at the top, has the before-mentioned advantages of graduated temperature in different pressure zones, so that the highest temperature prevails where the lowest pressure is present. The possibility is, however, as I said before, that the continuous pumping of liquor on top of the chip mass will tend to pack the chips so hard as to later interfere with the withdrawal of liquor through strainer and with the blow-off.

Another objection to this method, put forward by Messrs. Swanson, Lang and Smith in their paper, describing the Kimberley Clark system, is the following: "Introducing the heated acid in the lower pressure top zone would tend to flash some of the gas through the relief valve, thus reducing the acid strength more rapidly than necessary." This objectionable feature might prove an advantage as we have to bear in mind that with a forced circulation system the maximum cooking temperature required will be lowered because of the uniform temperature throughout the mass and consequently the removal of the last SO_2 before blowing is retarded, as there is a definite relation between the temperature and pressure within the digester and the amount of gas in the acid. This flashing out of the SO_2, especially in the end of the cook, might prove an advantage. The fact remains that there is a considerable tonnage of pulp produced in accordance with this method.

The third method, withdrawal from the middle and reintroducing at the top and bottom naturally also has its practical and theoretical value, trying as it does to combine the merits of the two systems.

As a conclusion I would like to say that either one of these systems probably does the work we have in mind equally as well, as what we really are striving for is a more uniform distribution of heat throughout the digester than is possible with the old method of heating. None of them probably is perfect, but either one ought to be a great advancement towards the goal, uniformity.

To get the discussion rolling in a big way, I would like to give my recommendations how I believe an installation of the future should be made. First, the acid should be preheated to not less than 80 degrees C., as much as possible from the available heat in the digester relief and, if same is not sufficent, the balance to be made up either through direct steam or through heat exchangers. There is enough waste heat in the blow-off liquors to take care of this requirement. The digester should be equipped with a sufficiently large top strainer to at all times permit the withdrawal of acid in sufficient quantity for at least three turnovers per hour. Strainer size should be 8 to 10 square feet per ton. Pump, motor and piping to be of adequate size for this amount of acid. If an outside heater is used, same to be placed after the pump and of enough heating surface to heat the acid to 110 degrees C. in 3 hours, or if longer cooking time than 11 hours is used, in corresponding time. If no heater is used, the direct steam should be perfectly blended with the circulating liquor before being introduced into the digester.

Upturn in Carloadings Reflects Increased Coast Production

"The paper and pulp industry in the Pacific Northwest has taken a decided turn for the better, and a perceptible increase is noted in all grades," said the report of the paper, paper products and pulp committee at the September meeting in Portland of the Pacific Northwest Advisory Board.) L. R. Gault is chairman of the committee; W. A. Brazeau is vice chairman.

"Prospective carloadings show an increase of 22.3 per cent over the last quarter of 1932; however, this does not reflect the full measure of increase in business, as a large portion of the tonnage moves coastwise by steamer and is handled either by river boats or truck to the seaports.

"All mills have increased their production and practically all have advance, capacity orders covering the next 60 to 90 days. Production has not been extended to a flooding point, but merely to parallel increased consumption; therefore, if the same demand will continue and the mills' present operating schedules are adhered to, the healthy condition of the paper and pulp business will endure.

"Small market advances are noted in paper articles, and our sulphite wood pulp members advise that the present outlook for price stabilization seems very encouraging. Shippers are turning more and more to the use of fiberboard and corrugated boxes, due to their many advantages; and it is expected that the apple box movement this fall will show a marked increase.

"Replies from members of the committee indicate estimated car loadings for the fourth quarter are as follows:

	Actual 1932	Prospective 1933
October	461	564
November	426	521
December	380	465
Total	1,267	1,550

PACIFIC SECTION CONVENTION SET for DECEMBER 2 at LONGVIEW

B. T. LARRABEE
Past President of National Association

The Pacific Coast Division of the American Pulp and Paper Mill Superintendents' Association, which was organized at the September meeting in Seattle, will hold its first convention at Longview, Wash., on December 2.

Thus starts the official life of this western group of mill superintendents who have created for their number a new and distinct identity in the organization of the nation's industry.

The meeting will be held at the Hotel Monticello, where the members will gather Friday evening, December 1, for a reception to precede the convention proper. The business session will be on Saturday, during which will come such features as the Question Box and the Round Table discussions which have become so popular in the various divisional meetings and at the national conventions. There will also be a display of equipment and supplies used in the manufacture of pulp and paper, illustrating the latest developments in these lines.

There will also be the usual mill visits in Longview, where, by that time, there will be some things to see out of the ordinary. The ladies are not being forgotten, and a program is being prepared for them by Mrs. Ben Larrabee. And there will be a dinner and dance Saturday night to wind up the convention in fine style.

Despite the fact that the division was so recently organized, its membership has already grown, and it is certain that the December convention will see even a larger crowd than at the initial meeting. The association is off to a good start, and its progress is even now impressive.

Official Survey Shows Low Wages Paid in the Industry of Finland

In a recent issue of the Finnish Paper and Timber Journal is published a survey of wages paid in the pulp and paper industry of Finland, made by the Ministry for Social Affairs, showing that in March, 1933, the average wage per hour in the entire industry was 16.1c for men and 7.86c for women. In 1928 the wages were 18.69c and 9.25c respectively (exchange figured at par—2.52c).

The Finnish Journal says, "Official statistics of this kind are all the more important in view of the fact that in recent time a good deal of misleading information has been spread abroad about the wage level in Finland." It points out that although reductions in wages have been made since 1928, the actual living wages, based on the changes in the cost of living, have not declined below the level of 1928.

The official tables published are as follows:

Average wage per hour for total work time in 1928 (In Finn. marks).

	Men	Women
Sulphate cellulose industry	8:28 (20.86c)	4:36 (10.99c)
Sulphite cellulose industry	7:76 (19.55c)	3:88 (9.78c)
Paper industry	7:29 (18.37c)	3:66 (9.22c)
Mechanical woodpulp and board industries	6:50 (16.38c)	3:29 (7.29c)
Whole paper, cellulose and pulp industries	7:42 (18.69c)	3:67 (9.25c)

Average wage per hour in paper and woodpulp industry 1928-32

Year	F. marks/hour Men	Women
1928 (September-November)	7:42 (18.69c)	3:67 (9.25c)
1929 (September-November)	7:51 (18.92c)	3:70 (9.32c)
1930 (August)	7:70 (19.4c)	3:79 (9.55c)
1931 (August)	6:69 (16.86c)	3:20 (8.06c)
1932 (August)	6:16 (15.52c)	3:02 (7.61c)
1933 (March)	6:39 (16.1c)	3:12 (7.86c)

Official living-cost index in 1928-32

Year	Official index	Index in 1928 = 100	Index Change in per cent
1928	1,233	100	
1929	1,225	99	— 1.0%
1930	1,129	91.5	— 8.5%
1931	1,039	84.5	—15.5%
1932	1,025	83	—17.0%

STATUS OF GENERAL PAPER CODE

The General Code for the pulp and paper industry is now in the hands of the administrator and about ready for submission to the president for approval.

After conferences between leaders of the industry, labor advisors and Deputy Administrator Pickard, a few revisions have been made in the latest code drawn up. Of particular interest is the increase in the minimum wage scale for the northern zone to 38 cents per hour for men and 33 cents for women. The central zone rates have been raised to 35 cents and 30 cents. The southern zone remains the same at 30 cents for men and 25 cents for women.

Paragraphs relating to the hours of workmen have been rewritten, making each classification clearer, and there has been written in a provision for the payment of time and a third for time over eight hours in one day other than certain watchmen, etc.

The latest code also provides that the Paper Industry Authority shall make a study of conditions in the industry to determine the feasibility of the adoption of a shorter working day. A report is to be made in three months.

SPAULDING REOPENING NOT YET DEFINITE

Although a small crew was at work recently repairing facilities at the Spaulding Pulp & Paper Co. mill at Newberg, Ore., O. M. Allison, secretary, is not yet ready to make any announcement of renewed activity.

SCIENTIFIC BOILER FEEDWATER CONDITIONING

By
KENNETH SHIBLEY

In view of the fact that all pulp and paper mills are users of steam in large quantities and are therefore in nearly every case operators of boiler plants, the questions of steam cost, efficient and safe boiler operation are of prime importance. A decade ago the whys and wherefores of scale formation in boilers, and certain means of its prevention, were unknown and seemingly a hopeless puzzle. This puzzle not only was annoying to operators, but injected danger and expense into their work as well. Because this unsolved puzzle existed, fantastic and secret formulas for its solution were in their heydey of application in the boiler room. The lime-soda and zeolite softeners were operating excellently on the feed water, but by their very nature could not control the changes occurring in the highly heated and concentrated boiler water.

Any puzzle is a complicated and hopeless problem until a solution is found, whereupon it all appears simple. Because of his belief that there was a simple answer to the puzzle of treating boiler waters so that boiler scale might be eliminated, J. M. Hopwood a little less than ten years ago initiated an investigation into the mechanism of scale formation in boilers. With the concurrence of A. C. Fieldner, now Chief Chemist and Supervisor of Stations, United States Bureau of Mines, this investigation was pursued as a joint project. Dr. R. E. Hall, who collaborated in these extensive researches, has no doubt done more than any other to bring the results of this work in its practical application to steam generating plants throughout the world. I am indebted to Dr. Hall for the greater part of the material contained in this paper.

A Simple, Exact Process

As had been expected, when the puzzling features of water treatment had been straightened out there remained no difficulties or complications. The rules and methods emerging out of the welter of theory, data, experimentation, and experience, have made water conditioning for boilers of all sizes and ratings and operating pressures, an exact and thoroughly understood process, and, as should be, simple of application to the mightiest as well as the humblest of boilers.

Boiler Water Conditioning

For attainment of these results it is necessary to establish and maintain, in the boiler water, definite relationships between carefully chosen added and natural components therein that are preventive of scale formation, corrosion, and boiler metal cracking (or embrittlement). This constitutes boiler water conditioning.

As chemicals to use, boiler water conditioning specifies simple, pure, substances of definite known composition, whose exact analysis forms the basis of cost to purchaser. Success is embodied not alone in proper choice of chemical, but equally in the continuous maintenance in the boiler water of the desirable concentration thereof. The results of the long investigation pointed out definitely the proper chemicals for different operating conditions, defined the desirable concentrations to maintain in the boiler water, and developed the simple routine tests whereby the boiler operator can assure himself of such maintenance at all times. And now, mark this statement: **Responsibility for clean surfaces finally rests with the operator, because it is he who must certify the maintenance at all times of the recommended conditions.** However, he is master of his own destiny, because, whatever may be the variations in the feed water he has a definite condition to maintain in the boiler water and a definite chemical with which to produce the conditions. Amount of chemical that he must use may vary largely according to conditions, but his tests signify the amount to use, and are as certain guides in charting his course through these changes as is a compass in charting the course of a ship.

The keynote in boiler water conditioning therefore is to establish and maintain in the boiler water a desirable concentration of conditioning chemical. Routine tests at satisfactory intervals serve notice as to amount of chemical to use to maintain the desired conditions. The chemical maintained in the boiler water is the actively engaged front line of defense against scale and corrosion. The routine tests on the boiler water are the roll call to determine the number of casualties since the preceding tests, and any change in rate of addition of chemical is merely the pro-rating of reenforcements to maintain the front line at full fighting strength. Thus any change in make-up water becomes apparent at once, because when the test is made it indicates change in amount of conditioning chemical required; but since, by change in amount of chemical the strength of the front line defense is maintained unimpaired, cleanliness of evaporative surfaces is attained continuously and indefinitely.

There are all degrees of cleanliness in a boiler, and what is considered a clean boiler by one operator may be thought a dirty boiler by another operator. When the front line of defense is carefully maintained by the proper addition of chemical to the boiler water, cleanliness means not only tubes that are clean to the metal, but headers, and all the nooks and crannies in the boiler as well—a condition which is impossible of attainment with mechanical cleaning.

Thus boiler water conditioning becomes an exact art, and the operator with his simple tests on the boiler water—and hence his exact knowledge of how much chemical to feed—becomes truly master of the whole situation.

The Relation of Boiler Water Conditioning to Water Softeners

Thus far we have confined our attention to the boiler water, and the conditions necessary to maintain therein in order to obtain cleanliness of surfaces. If the percentage of make-up is high, and if the raw water contains much calcium, then it becomes advantageous to remove a large part of this calcium in a softener before the water goes through the boiler. The usual types of soft-

Presented at Fall meeting of TAPPI, Tacoma, Wash., October 20-21, 1933.

ener are the lime-soda, which may be of either the hot or cold, continuous or intermittent type; and the zeolite softeners. Any one of the types of softeners will remove a considerable proportion of the calcium in the raw water, and will largely iron out any variations in the composition of the raw water, thus simplifying the proposition of maintenance of the desired relations in the boiler water.

Thus the softener becomes the primary defense against entrance of calcium into the boiler water, and the chemical control on the boiler water becomes the final defense to retain all calcium filtering through the preliminary defense. The combination of the softener for removal of part of the calcium, with the maintenance of final conditions on the boiler water, places the operator in an impregnable position, and the results on the boilers are splendid. In most cases wherever softeners are available we utilize them, because thereby the requirement of chemical on the boiler water conditioning is made less, and any ups and downs of calcium coming to the boiler are largely prevented.

Prevention of Corrosion

In addition to prevention of scale formation, elimination of two other equally important, undesirable conditions are comprised in boiler water conditioning, namely, corrosion, and the failure of the boiler metal through weakening by development of cracks therein. The latter condition is sometimes called embrittlement.

We will discuss prevention of corrosion first. In its prevention we must control two factors, namely, concentration of dissolved oxygen, and alkalinity.

The removal of oxygen is best effected at the heater, that making certain that the heater is kept up to a temperature of 210-212 degrees, and is well vented. Under these conditions the oxygen is brought down to about C.3 ml. per liter, which for many purposes is satisfactory. If, however, there are economizers which require better de-aeration, or if the feed water enters a bottom boiler drum, then it may be essential to decrease the amount of oxygen still further. In that case it can be done mechanically by use of a de-aerating heater, or it may be done chemically by use of an oxygen-absorbing chemical, such as ferrous sulphate or sodium sulphite. Oftentimes where the temperature of the heater is low, and where raising it to 210-212 degrees will provide sufficient de-aeration, bleeding of live steam back to the heater with temperature control on the heater, is advantageous.

Just as in control of the boiler water, a simple test can be used to determine the oxygen concentration in the water. A test of this sort does not have to be run as frequently as the tests on the boiler water, because there is not so much fluctuation in the oxygen content of water, and once the condition of the heater is established to give sufficient de-aeration it need be checked only intermittently.

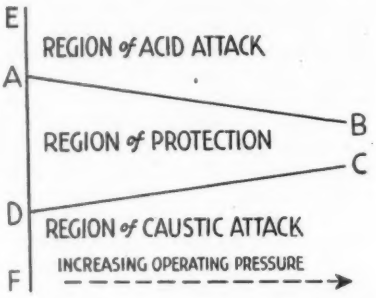
A good rule to follow on alkalinity in the boiler water, is to maintain the alkalinity at the lowest value compatible with the freedom from corrosion and freedom from scale formation. Anything more than the amount required for these purposes is undesirable, because of its tendency to cause carry-over in the steam, and because it makes more difficult the maintenance of the sulphate—alkaliyity ratios for prevention of embrittlement. Under the very best of operating conditions the alkalinity in the boiler water may be as low as 1 to 3 grains per gallon. In boilers where silica scale formation is troublesome it may be necessary to carry the alkalinity at from 10 to 20 grains per gallon.

Control of the caustic alkalinity in the boiler is extremely simple. A simple test on the boiler water tells how much is present therein. Alkalinities in general tend to run higher than desired, and the problem is therefore almost always one of reducing alkalinity. For this purpose we have found the use of an alkali-reducing phosphate particularly valuable, for it, in conjunction with caustic soda (or soda ash) gives exact and simple control over the desired relations which should be maintained in the boiler water, both for prevention of corrosion and elimination of scale. For the prevention of corrosion, proper removal of oxygen is necessary, as well as the maintenance of these relations in the boiler water.

Protection of Boiler Metal From Cracking

Cracking of the boiler metal may follow from maintenance of either too low alkalinity (or acidity) or too high alkalinity in the boiler water. Thus, in Fig. 1, we see a Region EAB in which cracking may occur because of too low alkalinity in the boiler water. Pure distilled water lies in this region, and boilers operating on pure distilled water have developed cracking of metal. There is need of a slight causticity in the boiler water that it may be in the Region of Protection, ADCB. The Region of Caustic Attack, FDC, represents concentrations of caustic above approximately 10%. Such concentrations of caustic should never occur in the boiler water proper, but may readily result from its concentration in seams. The action of this strong caustic is to corrode the metal, and thus by weakening it, and in conjunction with the stresses, and in particular the changes of stress occurring in the metal, to be causative of development of cracks, and ultimately of failure.

The tendency in modern boilers is to higher pressures. As shown in the diagram, the Region of Protection, ADCB is more limited at high pressures than at low. This



means that the control on the concentrations in the boiler water of the high pressure boiler must be more exact than in the case of lower pressure boiler. Protection from cracking embodies two phases:

(a) When new boilers are installed, all caulking should be on the inside only. We will not discuss the reasons therefor, but will emphasize that this factor be insisted upon by the purchaser, and that no outside caulking be applied.

Naturally, also, the purchaser should insist upon specifications of manufacture that insure the best of workmanship and metal, also a minimum of stresses in the metal, and a minimum of opportunity of changes of stress in the operation of the boiler. These factors are the responsibility of the manufacturer of the boiler.

(b) Once the boiler is erected the further protection of the metal lies in maintenance of favorable conditions in the boiler water.

Of these, the first to observe is to limit the alkalinity of the boiler water to the minimum essential for the prevention of corrosion.

The second is to maintain in the boiler water ratios of sodium phosphate to the total alkalinity that have been found to be protective against cracking. In the A.S.M.E.

Boiler Code the recommended ratios are 1 of sodium sulphate to 1 of total alkalinity, expressed as sodium carbonate, for pressures up to 150 lbs., a ratio of 5:1 for pressures about 250 lbs. We consider that the most dangerous zone is at the lower pressure, and in most of our plants maintain no ratio less than 2 of sodium sulphate to 1 of alkalinity. This is made possible by the careful control of alkalinity which we have discussed heretofore, since by holding the alkalinity low it requires only moderate concentrations of sulphate in the boiler water to obtain a ratio of 2 of sulphate to 1 of alkalinity.

Thus, protection from cracking of the metal, or embrittlement, is taken care of by the same control of boiler water concentrations that suffices to answer the problems of scale formation and corrosion.

Control of Boiler Water Alkalinity

The desirable alkalinity in the boiler water is the minimum compatible with economic use of phosphate and prevention of corrosion. Higher alkalinities than essential should be avoided, since increase in alkalinity is accelerative of carry-over of boiler water in the steam, and since the maintenance of the sodium sulphate—alkalinity ratios, recommended in the Boiler Code for the prevention of caustic embrittlement is far more simply and certainly attained with the minimum rather than the higher alkalinities in the boiler water. Alkalinity is the denominator of the ratio. Therefore, when it is a minimum, the quantity of the sodium sulphate required in the boiler water is also a minimum. This means that the chances of trouble from carry-over of boiler water in the steam are minimized, because with lower concentrations of dissolved solids in the boiler water there is lesser tendency for any carry-over to occur, and because, if carry-over does occur, there is less material in the water to do damage.

The tendency of boiler waters is towards high alkalinity rather than low in the great majority of cases. The control of boiler water alkalinity should begin with the proper choice of feed water treatment. Additional to this, however, it has been necessary to devise means of controlling the boiler water alkalinity that could safely be used in all types of plants. We have always regarded the use of acid for this purpose as a thing to be avoided if possible, and if unavoidable, its use to be under the strictest technical control, and with all the supplementary aids available to act as defense against corrosion in the path to the boiler, and in the boiler itself.

We searched for and found a solution to this problem of reduction of boiler water alkalinity without the use of acid in the molecularly dehydrated phosphates and, therefore, introduced them into water conditioning practice. While they are neutral as dissolved in the feed water, when they arrive in the boiler water they are transformed gradually into ordinary orthophosphate form whereby they provide the essential phosphate radical to combine with calcium and prevent scale formation, and at the same time, produce hydrogen ion which neutralizes the alkalinity in the boiler water. This transformation in the boiler water of the molecularly dehydrated phosphate into orthophosphate form may be suitably termed its hot water chemistry. Thus it becomes possible to reduce or control the boiler-water alkalinity as desired, and without danger of corrosion of feed-lines or boiler.

We would emphasize the tremendous importance of the exact control, and maintenance at a minimum, of the boiler water alkalinity. Time and again, in the Pittsburgh area, where the waters are sulphate in character, we have found in the boiler waters a content of alkalinity introduced by treatment of the feed water well-nigh equal to or even greater than all other solubles resulting from those in the natural water. There is no excuse for these conditions, since cleanliness of boilers and their freedom from corrosion are as readily and as economically attainable at desirable low alkalinities as at those which are so excessively high.

Prevention of Feed-line Scale

Necessity of maintenance of exact conditions in the boiler water brought with it the problem of distributing the essential boiler-water conditioning chemicals to the boilers in proportion to their requirement of feed water. Obviously this is most simply accomplished by introduction of the chemicals into the feed water in proportion thereto, following its primary treatment. Unfortunately, many of the treating chemicals, such as tri-sodium phosphate, cause much trouble if used in this manner because they form scale in the feed lines and pre-boiler equipment, thus endangering the supplying of feed water to the boiler.

In the cold water chemistry of the molecularly dehydrated phosphates, we have found an effective answer to this problem. When sodium meta-phosphate, for instance, is added in requisite amount to a hard water, the calcium and magnesium are sequestered so firmly in the complex meta-phosphate radical, that even the most searching reagents fail to locate them in the water. The water is absolutely soft, and moreover, in proportion to the excess of the meta-phosphate present, actually exercises dissolving power on any deposits such as calcium carbonate or calcium phosphate with which they may come in contact. Inasmuch as the amount of phosphate required to sequester the calcium in this manner is greater than that required to precipitate it as tricalcic phosphate in the boiler water, the molecularly dehydrated phosphate is introduced intermittently into the feed water so that during each period when it is being added its excess in the feed water is the calcium and magnesium and provide solvent action on any deposits that have been laid down in the intervals between the intermittent feeding. Thus it becomes possible to secure the advantage inherent in supplying the requisite boiler-water phosphate to the feed water without incurring the disadvantages of feed line scale.

Conclusion

In the early part of this discussion we have pointed out the simple but necessary things to do in order to maintain clean evaporative surfaces in the boiler. In the latter part we have more briefly discussed those things necessary to do to inhibit corrosion and metal cracking, or embrittlement. Throughout the paper we have emphasized the fact that attainment of these results resides in the maintenance of the necessary conditions in the boiler water, and therefore in the careful attention of the operator thereto. There are no secret chemicals and there are no mechanical contraptions whatsoever that can be substituted for this careful attention of the operator to the maintenance of conditions in the boiler water. And when he takes his boiler off the line and finds it in good shape, he may justly take the credit to himself, for it is his efforts in following well-conceived methods that have gained the results.

The immediate results of cleanliness of surfaces or stoppage of a little pitting, are insignificant in comparison with that greater thing, namely, the safety attending the operation of the boiler at all times. The positive safety which represents minimum risk in operation requires the continuous maintenance of those conditions known to be correct in preserving the boiler surfaces from

deterioration. The assurance that those conditions are maintained is based on the tests made daily at the plant by the operator or his assistants. Safety, we believe, is the result of primary importance in exact water conditioning, and we are glad to vouch for the possibility of continuously clean surfaces and freedom from corrosion and embrittlement.

SWALLWELL TRANSFERRED TO SAN FRANCISCO

W. H. Swallwell, who was in the office of the Grays Harbor Pulp & Paper Co. at Hoquiam and the Olympic Forest Products Co. at Port Angeles, is now in the San Francisco office of those companies in the Crown-Zellerbach Building at 343 Sansome St.

National Aniline Opens Coast Laboratory

A laboratory has been opened by the National Aniline & Chemical Co., Inc., at 646 North Thompson Street, Portland, Ore., to answer a demand from paper mills in the Pacific Northwest for quick research and chemical service on dyestuffs. R. S. Carey, who has had 10 years' experience in laboratory and demonstration service at the company's Buffalo factory, is in charge at Portland as Northwest representative. Ralph Waldo, San Francisco, is coast manager for National.

Overnight service in the matching of shades can be given the mills by this new laboratory. Mr. Carey is thoroughly conversant with paper mill practices and is in a position to extend color matching service to the western paper manufacturers in a very practical manner.

Mr. Carey has been on the coast for the past three years. The Portland laboratory has been operating since last May.

Adequate warehouse stocks are being built up as rapidly as the business warrants. The firm's business among the Northwestern paper mills has been quite good lately, Mr. Waldo reports.

Mr. Carey was in attendance at the TAPPI meeting at Tacoma.

R. S. CAREY

MACHINE CHANGES MADE AT LEBANON

In the Lebanon, Ore., mill of the Crown Willamette Paper Co., ten 36-inch diameter, 86-inch face dryers are being installed on No. 3 machine, increasing the drying capacity of that unit.

JAPANESE PULP IMPORTS

Japanese imports of chemical pulp in the month of August, 1933, were as follows (amounts stated in lbs.): Canada, 4,750,800; U. S. A., 5,725,200; Norway, 6,000,800; Sweden, 2,883,600; Germany, 22,400; Czechoslovakia, 224,133, and Europe, 991,733. Total, 20,598,666.

BENSON NOW CHIEF CHEMIST AT CARTHAGE

W. R. Benson, formerly with the National Paper Products Co. at Port Townsend, Wash., has become chief chemist of that company's plant at Carthage, N. Y. He entered on his new duties October 2.

Mr. Benson, who is a son of Dr. H. K. Benson, head of the chemistry department at the University of Washington, spent the last two years in the Dupont cellophane plant at Buffalo, N. Y. He is a graduate of the University of Washington.

OREGON CITY UNION BEING FORMED

Pulp and paper mill workers of Oregon City, Ore., are forming a union local, as has been done in a number of other paper manufacturing centers in the West.

It is reported that a similar organization is to be formed at Everett, Wash., shortly.

OYSTERMEN FILE SUIT AGAINST RAINIER

Suit has been filed in the federal court at Tacoma by the present owners of the Blass and Helser oyster grounds in Oyster Bay against the Rainier Pulp & Paper Co. of Shelton, alleging injury to oysters and claiming damages. The Rainier company has filed its answer and indicated its intention to fight the suits to a final settlement. Judge Cushman has set the cases for hearing on January 9.

DON DENMAN ON CONSERVATION COMMITTEE

D. S. Denman, logging manager for the Crown-Willamette Paper Co., Seattle, has been named a member of the Committee on Conservation of the West Coast Lumbermen's Association, to function in the administration of the lumber code.

FIR-TEX REOPENS

The St. Helens, Ore., plant of the Fir-Tex Insulating Board Co. has renewed operations and will continue to work until some time in December at least, according to A. E. Millington, general manager.

A crew of 140 men is employed, the men working four six-hour shifts under the NRA code. The plant was reopened in order to fill in the stock of ½-inch building board. Recent large sales to the government for use in the construction of barracks in C.C.C. camps has depleted the stock built up during the period of operation early in the Fall.

There have been no recent changes in the supervisory or executive personnel of the company.

STENSTROM IN AUSTRALIA

David G. Stenstrom, who has succeeded Frank N. Youngman as manager of Pacific Mills, Ltd., in British Columbia, with head office in Vancouver, is now visiting Australia, exploring market possibilities. Owing to outside competition and various other influences, there has been little improvement so far in the Australian newsprint market, although betterment in that country's domestic situation is expected to lead ultimately to better demand. In the new budget announced this month by Premier J. A. Lyons, newsprint is excluded from tariff preference inasmuch as the special $4 a ton bounty was ordered removed from Canadian newsprint some time ago.

St. Helens Mill Denies Union Charges

Intimidation of employes of the St. Helens Pulp & Paper Co. of St. Helens, Or., by officers of the company to prevent workers from collective bargaining concerning rates of pay, rules and working conditions and to discourage membership in unions in violation of the NRA, is alleged in a suit filed October 17 in federal court at Portland, Ore.

The plaintiffs are the Oregon State Federation of Labor, the American Federation of Labor, Ben T. Osborne, as executive secretary of the Oregon federation, the Brotherhood of Pulp, Sulphite and Paper Mill Workers' local union No. 166, R. B. Huntzinger, president of the union, "on behalf of the pulp, sulphite and paper employes in the employ of the St. Helens Pulp & Paper Co.

The alleged actions of the company are described as violations of the national industrial recovery act. The company signed the president's agreement August 24, 1933, and has the Blue Eagle, the plaintiffs set forth. No code of fair competition for the industry has been approved by the president, the complaint points out.

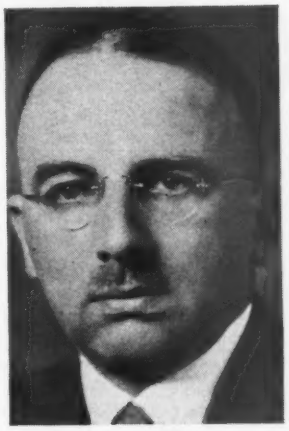
Defendants in the suit are the St. Helens Pulp & Paper Co. and its officers: Max Oberdorfer, general manager; J. E. Ryberg, assistant general manager; H. R. O'Dell, master mechanic; Unio Frycklund, superintendent of pulp mill, and J. Zaniker, foreman of the finishing plant.

An injunction to prevent continuation of the alleged intimidation is asked in the suit, and the court is petitioned to restore workers discharged.

The charges of the union organization are explained and denied in a statement to Pacific Pulp & Paper Industry by Max Oberdorfer, president and general manager, who said:

"The management of our company has religiously complied with all the provisions of the NRA. We have added nearly 100 men to our payroll, have raised wages from 20 to 24 per cent, have established a minimum wage considerably higher than established in the proposed paper code.

"We are now employing approximately 600 people in our plant. Naturally a certain number of people leave or are being discharged in the course of normal labor tur over, and since it happened that several of the people discharged belonged to the labor union, the union now claims that they were discharged for the reason that they belonged to the union. The union also charged that men have been intimidated so as not to join the union.



MAX OBERDORFER

"At the time our company signed the NRA the men in charge of operations in the mill were informed that the employees had a right to join any labor organization of their own choosing, and that it was unlawful to intimidate men who were desirous of joining a union, and to discharge employees for the reason that they had joined a union. We are convinced that the men in charge of operations have not violated the NRA."

FIRE LOSS LOW

An all-time low record in fire losses on the national forests of Oregon and Washington is indicated by the report for the 1933 season, according to the regional forester's office. The total area of national forest land burned is only 4,746 acres in 1933, as compared with the 34,353-acre record of 1932. Since adequate records were started in 1908, the highest years have been 695,253 acres in 1910, and 328,659 acres in 1929. Reports from the forester's office in Washington, D. C., indicate an all-time low for the entire national forest area of the United States, with a 60 per cent decrease in acreage burned as against 1932.

ZOPOLOS JOINS GRAYS HARBOR TECHNICAL STAFF

Peter Zopolos of Chehalis, Wash., is now with the technical control department of the Grays Harbor Pulp & Paper Co. at Hoquiam. He is a graduate of the chemistry department at the University of Washington.

MURRAY EAST AGAIN

J. L. Murray, in charge of sales promotion for the Everett Pulp & Paper Co. left again for the East recently to attend a number of trade meetings in Chicago and New York. The Book Paper group held a preliminary meeting at York, Pa., October 24 and 25, which was followed by a general meeting in New York, October 26 and 27. The purpose was to discuss trade practices, merchandising, and to plan for their supplemental code.

Mr. Murray is a director of the Stationery, Tablet and School Paper Manufacturers Association, and is chairman of the traffic and zoning committee. This group meets in Chicago November 6 and 7. Their code has been filed and is now under consideration. At the hearing, the Typographical Union claimed that because some of the manufacturers do a certain amount of printing, they should come under the typographical code.

Another problem to be worked out is the matter of the count on 5-cent and 10-cent stationery, particularly between the chain stores and jobbers.

Mr. Murray, from his contacts at the various meetings, believes that the government is trying to be fair in working out the codes and understands that the manufacturer must make money in order that the desired increased purchasing power may be spread around to everyone, rather than to labor or capital alone.

FOR SALE
AND LOCATED IN
SAN FRANCISCO

One 60" Hamblet standard single rotary Sheet Cutter, complete with slitting attachment; 3 sets rotary slitters and six roll back stand. Also 5 h.p. variable speed Crocker-Wheeler, 230-volt, D. C. motor, with controller. A1 condition. Immediate delivery. Reasonable price. Address Box 24, care Pacific Pulp & Paper Industry, 71 Columbia St., Seattle, Wash.

T·R·A·D·E • T·A·L·K

of those who sell paper in the western states

+ + + +

CUTLER BONESTELL BACK ON JOB

After more than a year's absence from his office on account of illness, Cutler Bonestell, pioneer member of the firm of Bonestell & Co., San Francisco paper jobbers, checked in at headquarters early in October looking fit to tackle any job necessary. Mr. Bonestell is spending most of his time these days recuperating at his beautiful home at Atherton, on the San Francisco peninsula, and has just bought a fine big car to make the recuperation easier.

PATTONS HERE FROM HONOLULU

W. M. Patton and his son, Hugh, of the Patton Paper Co., Honolulu, T. H., were in San Francisco in October.

WEDDING BELLS

Wedding bells interrupted the routine at the San Francisco office of Carter, Rice & Co., paper jobbers, on Sept. 30, when Charles Staggs, who handles the city sales desk, was married to Miss Marguerite Spillane, a stenographer in the same office. The entire Carter-Rice staff attended the wedding and a reception which followed.

WESTVACO COAST SELLING POLICY UNCHANGED

The West Virginia Pulp & Paper Company announces that its selling policy for the Pacific Coast States remains unchanged. They will continue to sell direct from both mills and San Francisco warehouse. West Virginia's Westvaco brands may also be obtained from Bonestell & Company, San Francisco; Carpenter Paper Company, Los Angeles, and Wadhams' & Company, Portland, Ore.

George L. Rodier, Pacific Coast manager, West Virginia Pulp & Paper Company is now on a selling trip in the Northwest and is contacting the printers, publishers in connection with their needs of the various Westvaco Brand lines.

A. W. TOWNE

ELKUS BROTHERS RESIGN

The Elkus brothers, Richard and Eugene, have resigned from the Zellerbach Paper Co. employ at Los Angeles and Fresno, respectively, and it is reported they are contemplating engaging in the paper business in San Francisco.

NEW LINE FOR COCHRAN

Andrew H. Cochran, San Francisco, Pacific Coast sales representative for Dill & Collins, Inc., book paper manufacturers of Philadelphia, has taken on the western mill representation for the George W. Wheelwright Paper Co., Leominster, Mass., an old-established manufacturer of bristols and other cardboards. The Zellerbach Paper Co. and other jobbers handle the Wheelwright line on the coast.

General Paper Co. is the exclusive Los Angeles dealer for Dill & Collins, Mr. Cochran says.

COAST REPRESENTED AT CHICAGO PAPER TRADE MEET

Arthur W. Towne, president of the Pacific States Paper Trade Association, was back at his desk in San Francisco October 16 after a two weeks' trip which included attendance at the National Paper Trade Association fall meeting at Chicago, October 4-8. Mr. Towne, who is a director of the national body, represented the coast organization at this gathering.

Another San Franciscan who attended the N. P. T. A. meeting was Harold L. Zellerbach, who is vice-president of the wrapping paper division of the national unit and also a member of its code committee. The only other coast jobbers at the Chicago session were both from Los Angeles and were Sam Abrams of the United States Paper Co. and Kenneth Holland, manager of the Carpenter Paper Co. Mr. Abrams is a vice-president of the Pacific States unit.

President Towne said the Chicago meeting was taken up very largely with code matters and the delegates were free with expressions of confidence in the N. R. A. The paper distributors' code, he added, was the first wholesalers' code heard in Washington.

About a dozen western paper jobbers became members of the N. P. T. A. during this year, President Towne reported, among them four Salt Lake houses and three in Spokane, who had previously withdrawn from the Pacific States unit, but whose recent return to that body entitled them to membership in the national.

MISS WAHL TAKING DESERVED VACATION

Miss Hildegard Wahl, the very efficient secretary to H. Arthur Dunn, secretary of the Pacific States Paper Trade Association, is missed at her San Francisco office these days as she is on an extended vacation and rest at Los Gatos, Calif. Miss Wahl has been with the Pacific Coast association and the San Francisco Paper Trade Conference for about 14 years.

SPIVAK LEAVES ZELLERBACH

Irving Spivak, for 17 years with the Los Angeles division of the Zellerbach Paper Co., has resigned. He was in the purchasing department.

PAPER INDUSTRY IN NRA PARADE

Fred C. Inkster, manager, city wrapping paper department, Blake, Moffitt & Towne, Portland, had charge of the participation of the paper industry in Portland's recent NRA parade. A marching army of 75,000 was reported — but not all were from the paper trade.

NRA PROBES COAST PAPER PRICES

The United States attorney's office in San Francisco on October 10 launched an investigation of allegations that paper companies in the bay region have taken advantage of the NRA drive to raise prices more than justified.

Notices were sent to five book paper companies to appear at the District Attorney's office and explain. Those summoned were the Zellerbach Paper Co., Blake, Moffitt & Towne, West Virginia Paper Co., Bonestell & Co., and the Pacific Coast Paper Co.

The proceedings so far are merely fact finding, and follow the filing of price boosting charges by an unnamed individual. The complaints were to the effect that book paper prices have increased 40 per cent in the last 90 days, and that complainants had been told by the paper companies that price increases were made necessary by the code. It was maintained that no code had yet been finally approved and signed for the book paper group.

A complete report has been sent to Gen. Hugh Johnson in Washington, who has referred it to the Consumers' Committee.

The paper companies have not cared to issue a statement nor to discuss the matter in detail, but are understood to be confident the charges will be proved unfounded.

While it is true that the NRA codes for the paper industry and for the book paper group have not been signed by the President, the book paper mills are already operating under the requirements of these codes, and their costs have been materially increased thereby, in advance of the actual effective date of the codes for the industry.

PRINTING BEATS TONGUE

The printed word won in a recent debate conducted by the San Francisco Advertising Club on the subject: "Resolved, that the printed word is a more potent force in securing business than the spoken word".

R. C. Ayres, San Francisco, director of advertising of the Zellerbach Paper Co., says this subject has been debated several times in the last 18 years and every time the printed word has won. Mr. Ayres was in one of the first debates.

SAN FRANCISCO VISITORS

Alfred Sreve of the Miami Valley Coated Paper Co., Franklin, Ohio, was a San Francisco visitor in October.

J. M. Thompson, manager of the Seattle office of Blake, Moffitt & Towne, was also in town.

N. A. Baker of the District of Columbia Paper Co. of Washington, D. C., was a coast visitor in October. His firm specializes on blotting papers.

C. H. Merchant, San Francisco, head of the paper department of The Johnson-Locke Mercantile Co., reports that Earl Wheatly of the International Pulp & Paper Co., New York, was on the coast in October visiting the trade. Johnson-Locke handle the International lines in the west.

Earn Craver, San Francisco, coast representative of the Continental Paper Bag Co. and the Southern Kraft Corporation, was on a coast tour in October. Johnson-Locke handle Mr. Craver's lines.

Harry Growtage, vice-president of Charles C. Bainbridge's Sons, stationery manufacturers of Brooklyn, N. Y., was a Pacific Coast visitor in September.

Another easterner on the coast this fall was Louis Gailer of the Whiting-Plover Paper Co. of Wisconsin.

Arthur Hosfeldt, sales manager of the Hawley Pulp & Paper Co., was in California from Oregon City, Ore., in October and reported business as being good at his mill.

MAURY COLTON PASSES

Louis A. Colton, San Francisco, vice-president and director of purchases of the Zellerbach Paper Co., lost his brother, Maury R. Colton, by death on Sept. 7. Maury Colton was with the Precision Electrotype Co., San Francisco.

GIMLIN BACK FROM EAST

Horace M. Gimlin, San Francisco, Pacific Coast sales representative of the Gilbert Paper Co., returned from a visit to the firm's Wisconsin factory in September and reported business as brightening in the Middle West. The Gilbert company manufactures coated bonds and ledgers.

COMMERCIAL PAPER CORPORATION ADDS TO LINE

The new price list being issued by the Commercial Paper Corporation of San Francisco reveals a number of new papers added to the company's lines. Among these are Glendale Kid and Linen Finish Bristol and Sheerleaf lightweight bond, of the Chemical Paper Manufacturing Co.; the Doubletone Coated Post Card of the Miami Valley Coated Paper Co.; Summer Bristol; and Albion Offset.

MRS. MARTIN PASSES

Mrs. A. B. Martin, wife of the vice-president of the Crown-Zellerbach Corporation, died in California late in September. Floral tributes were sent to the funeral by the many friends of the family among the mills and paper trade all over the Coast.

PORTLAND TRADE DECLINES

Some decline in paper business after several months of steady increase is noted by C. L. Shorno, vice president and Portland manager of Blake, Moffitt & Towne, and Walter D. McWaters, manager, Zellerbach Paper Co. Mr. McWaters looks for some increase in business due to construction of the Bonneville dam, now under way, and a great improvement when the dam is complete. Mr. Shorno sees great prospects for the Pacific Northwest in both the Bonneville and the Grand Coulee dams.

MAXWELL BACK FROM CAMAS

D. L. Maxwell, San Francisco, Pacific Coast representative of The Tissue Co., returned to his desk in October from a brief visit in the Pacific Northwest and reported he visited at Camas and found the Crown Willamette mill there going full blast. The Tissue Co. has a converting plant at Camas, where it operates in connection with the C-W establishment. The Tissue company plant is operating regularly in an effort to pile up stocks so immediate deliveries can be made.

Progress Toward Recovery Being Made by Canadian Operators

Although Canada's newsprint industry still has a long way to go before it is out of the woods, definite progress towards recovery has been made in the last few months, partly as a result of the National Recovery Act in the United States.

Seasonal influences are partly responsible for the upturn, but there has been a general improvement in operations and earnings and operators are feeling a good deal more hopeful of the situation than they were early in the year.

Newsprint manufacturers have belatedly arrived at the conclusion that price cutting will not remedy the situation and that something more substantial is needed to stabilize conditions. The drafting of a code by American newsprint men has had a powerful effect in Canada. Knowledge that American mills will be operating under a common agreement when the code is signed has spurred Canadians to intensive efforts to bring about a spirit of cooperation in their own camp. The old policy of "dog eat dog" is being abandoned.

Mills at 60 Per Cent Capacity

In August Canadian mills turned out nearly 200,000 tons of newsprint, which means that mills were operating on a ratio of nearly 60 per cent compared with about 50 per cent earlier in the year. Consumption of newsprint at this time of the year shows a seasonal increase, and, if the trend of other years is followed, newsprint sales during the balance of the year will permit a further increase in mill activity.

Although several mills have been forced into bankruptcy, the newsprint industry in Canada is still basically sound. Canada can produce and sell newsprint in competition with any other country. From the standpoint of the Canadian industry, Canada represents a permanent source for at least one-half of the United States newsprint requirements. Even though the code enables the American mills to run their plants at capacity, the United States publisher will still have to depend on the Dominion for a large share of his requirements, for some time to come.

Complete recovery of the newsprint industry in Canada, therefore, depends on the ability of the American publisher to increase his purchases. When operations are again at 80 per cent of capacity, the Canadian mills will be able to show fairly substantial earnings. The long depression has compelled manufacturers of newsprint to curtail waste to a minimum and when better conditions come they will be in better shape than ever before.

Pulp Makers Holding Own

As for the pulp manufacturers in Canada, they have more than held their own, except for a few top-heavy organizations which were forced out of the picture soon after the tumble in prices. Economies have been widespread and production costs have been reduced to a point which would have been considered out of the question a few years ago. The greatest improvement has been reported by the sulphite branch of the industry. This year should be one of the best experienced by sulphite producers in some time.

Sulphate pulp and kraft manufacturers have also come in for their share of prosperity. Kraft prices have been going up slowly but steadily most of the year. The market for fine paper still reflects the inactivity in most businesses, but most of the fine paper producers entrenched themselves pretty well during good times and are well prepared to stand the present period of adversity. Paper specialty manufacturers have experienced some contraction in their business.

OREGON SAFETY RECORDS IMPROVE

Edwin R. Brown, general manager, National Safety Council, Oregon and Columbia Basin division, reports an improvement in the safety record of all Oregon pulp and paper mills.

Oregon Pulp & Paper Co., Salem, has established an excellent record for the first nine months of 1933. In this period it experienced 30 per cent less accidents and 35 per cent less lost time than in the corresponding period of 1932. O. P. Wegner, master mechanic, is chairman of the safety committee.

Hawley Pulp & Paper Co. also has achieved a noteworthy improvement under the safety leadership of E. A. Norton, chief electrician.

WESTERN PUBLISHER RAPS VICIOUS PROPAGANDA

In the Port Angeles (Wash.) Evening News under date of Sept. 21, caustic comment is made by the publisher on the abysmal ignorance and selfish prejudice toward the western pulp and paper industry which he found in certain eastern quarters.

Mr. Welsh wrote in his daily column:

"The East has much to account for in a vicious propaganda against western products in favor of imports. Likewise the West has much work to do in convincing the East that we have the real goods. When this winter walked into the sanctum of the American Newspaper Publishers' Association in New York to complain at their fighting depreciated currency legislation he was amazed to hear their secretary-manager boldly assert that he understood Americans could not make as good pulp as foreigners could, and that "anyway there is only a limited supply of pulpwood in the United States and we must protect ourselves against the future." We acquainted this gentleman with the fact that the Olympic peninsula itself had sufficient pulpwood acreage to keep all newspapers and factories west of the Mississippi river supplied with pulp, sulphite and paper from now until Gabriel blows his trumpet. He was amazed to hear that peninsula climate permitted the harvesting of pulp crops every 25 years in the rainy sections. And he backed water when we told him that the cellophane around his cigars and the very tie he was wearing likely came from Port Angeles or Shelton spruce and hemlock trees. The Pacific Coast produces the finest pulp in the world. Given only an even break that pulp can be laid down on the Atlantic coast cheaper than foreign countries can ship it in. Not only that, but it will furnish much tonnage for American ships, tolls for the Panama Canal. Give Pacific Coast pulp the "even break" and youl'll see new industrial expansion. More Americanism from easterners, and more advertising and exploitation by westerners may bridge the gulf."

SMALL APW PROFIT

Financial report of the APW Paper Co., Inc., for the fiscal year ended June 30 shows net income of $4,057, equivalent to 2 cents a share on the capital stock. In the previous fiscal year the company showed a net loss of $39,421.

Proposed Northwest Canal May Benefit Pulp Plants

The proposed Puget Sound-Grays Harbor-Willapa Harbor-Columbia River canal may, if constructed, serve to knit closer together Pacific Northwest pulp and paper plants and their available timber supplies.

This was brought out at hearings held recently in Aberdeen, when statements from the Hawley Pulp & Paper Co., the Columbia River Paper Mills and the St. Helens Pulp & Paper Co. were read, to the effect that mills on the lower Columbia River would be able to profitably use the Columbia River-Willapa Harbor link to get spruce and hemlock logs from the great timber stands in the Willapa Harbor section.

Two plans have been set forth for this transportation improvement, one for a 16-foot ship canal which would enable the larger steamers to operate, and another for a 10-foot barge channel. The latter plan seems favored at present, because of its lower cost, and because indications are that the major traffic in sight is log towing and package freight which could be handled by a barge line.

At present, transportation of logs and freight between Puget Sound and the harbor area, and between Willapa and Grays Harbor and Columbia River points, is available only by expensive railroad route, or by roundabout water shipping.

The channels being considered would connect the Columbia River with Willapa Bay, Willapa Harbor with Grays Harbor, and Grays Harbor with a point in lower Puget Sound near Olympia. They would not only permit the rapid and economical movement of logs to points of manufacture, but also make possible the shipping of finished products to deep sea ports at great savings. It would also open up mineral deposits by offering cheap transportation. These include lime rock, coal, copper, iron and manganese.

The project is being pushed not only as an unemployment relief measure, but also as a major means of opening up new areas of timber and other Northwest natural resources for development.

FOLDING PAPER BOX INDUSTRY CODE

Public hearings were conducted October 26 on the code of the folding paper box industry, filed by the association of that name claiming to represent 67 percent of its total volume. Deputy Administrator W. W. Pickard presided.

The proposed code provides the following schedule of maximum working hours: Watchmen, 56 hours a week; chauffeurs and truckmen, 48 hours in any period of 13 consecutive weeks; engineers, firemen and electricians, 168 hours in any period of four consecutive weeks; all other labor, mechanical workers, factory employes, not more than 40 hours per week in any period of 13 consecutive weeks, and not more than 48 hours in any one week, provided that such employes may work not to exceed 48 in any one week in cleaning and maintenance of plant which cannot be performed in any regular working hours, such number not to exceed 10 percent of the total number of workers. Executives receiving $35 a week or more are exempted. All other employes 40 hours a week maximum in any period of 13 consecutive weeks.

The code proposes a minimum wage for factory employes of 35 cents an hour for male and 30 cents an hour for female, except that in the South the minimum rate is fixed at 30 cents an hour for males and 25 cents an hour for females, with no differentiation by reason of sex where the work performed is substantially the same. The minimum rate for all other employes except commission salesmen, $13 a week, except in the South, $12 a week.

SALEM UNION ORGANIZED

A local branch of the Paper Makers' Union, which is affiliated with the American Federation of Labor, has been formed at Salem, Ore. Charles F. Davis is president of the new group.

SCHMITZ ON FLYING TRIP

Ferdinand Schmitz, Jr., of the Rainier Pulp & Paper Co., returned recently to Shelton after a flying trip to San Francisco, where he conferred with officals of the company. It was a "flying trip" in the true sense of the word, the journey being made by plane.

SHELTON UNION OFFICERS NAMED

Local 161, Pulp, Sulphite and Paper Mill Workers' Union at Shelton, Wash., has completed its organization and installed a full slate of officers. The membership now numbers approximately 300.

Ed. Fourre was installed as president. Other officers are: L. W. Packard, vice president; Merle Cleveland, secretary-treasurer; Fred Roberts, corresponding secretary; Ted Fuller, financial secretary; Vivian Morgan, inner guard; John Camper, outer guard. Trustees are W. F. McCann, Lyle O'Dell and Charles Hurst.

SEPTEMBER NEWS PRINT STATISTICS

Production in Canada during September, 1933, amounted to 179,416 tons and shipments to 183,971 tons, according to the News Print Service Bureau. Production in the United States was 72,907 tons and shipments 75,008 tons, making a total United States and Canadian news print production of 252,323 tons and shipments of 258,979 tons. During September, 23,701 tons of news print were made in Newfoundland and 1,009 tons in Mexico, so that the total North American production for the month amounted to 277,033 tons.

The Canadian mills produced 1,369 tons more in the first nine months of 1933 than in the first nine months of 1932, which was an increase of .1 percent. The output in the United States was 71,527 tons or 9 percent less than for the first nine months of 1932, in Newfoundland 16,030 tons or 8 percent less, and in Mexico 2,119 tons more, making a total decrease of 84,069 tons or 3 percent.

Stocks of news print paper at Canadian mills are figured at 37,237 tons at the end of September and at United States mills 19,152 tons, making a combined total of 56,389 tons compared with 63,045 tons on August 31, 1933.

McBAIN SEES BRIGHT FUTURE FOR COAST

Tonnage of pulp and paper shipped east from the Pacific Coast will more than double in the next ten years, is the conclusion of B. T. McBain, of Portland, following a five month trip through the Middle West and East. The consumption of pulp and paper is increasing in the East and Mr. McBain looks forward to some substantial developments upon the Pacific Coast shortly.

NEW PAPER MAKING PATENTS

A Summary of U. S. Patents on Paper Making Issued During September

Compiled by
Patent & Technical Information Service
1336 New York Ave. N. W.
Washington, D. C.

1,925,372. Process of De-inking Printed Paper. Elton R. Darling, Elgin, Ill., assignor to Mariner & Hoskins, Inc., Chicago, Ill.

1,925,448. Process for Improving the Transparency of Glassine Paper. Julius E. Kiefer, Milwaukee, Wis., assigner to Transcello Paper Company, Milwaukee, Wis.

1,925,526. Coloring Paper and the Like. Franz Dotzel, Ludwigshafen-on-the-Rhine, Germany, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

1,925,584. Production of Pulps Containing Thermoplastic Substances. Harry C. Fisher, Cincinnati, Ohio, assignor to The Richardson Company, Lockland, Ohio.

1,925,722. Method of and Apparatus for Treating Pulp Stock. Gumal Knopp, Berlin, Wilmersdorf, Germany, assignor, by mesne assignments, to Centrifugal Engineering and Patents Corporation, Jersey City, N. J.

1,925,833. Consistency Regulator. George F. French, Stamford, Conn., assignor to Riegel Paper Corporation, Riegelsville, N. J.

1,925,866. Synchronized Motor Drive for Super-Calenders and Winders. Chester W. Drake, Irwin, Pa., assignor to Westinghouse Electric & Manufacturing Company.

1,925,922. Beater for the Paper Industry. Edouard Hery, Paris, France.

1,925,917. Paper Press Belt. Otto T. Chalon, New York, N. Y.

1,925,949. Paper and Textile Machinery. John J. Case, Bound Brook, N. J., assignor to John Waldron Corporation, New Brunswick, N. J.

1,925,972. Primary Press Section for Paper Machines. Albert H. Standley, Jacob Edge and Edward T. Street, Downingtown, Pa., assignors to Downingtown Manufacturing Company, Downingtown, Pa.

1,926,002. Manufacture of Wood Pulp. Frederick C. Hahn, Wilmington, and Robert E. Fothergill, Elsmere, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

1,926,028. Fabricated Material and Process for Its Manufacture. Willis A. Boughton, Cambridge, Mass., assignor to Bennett Box Company, Boston, Mass.

1,926,292. Paper-Making Machine and Method. Ralph Henry Kruse, Pelham Manor, N. Y., assignor to The Cambridge Instrument Company, Inc., Ossining, N. Y.

1,926,319. Paper Making Machine. Frank J. Timmerman, Green Bay, Wis.

1,926,546. Method and Apparatus for Removal of Mechanical Impurities from Cellulose and Other Similar Fiber Pulps. Aleksander Lampen, Imatra, Finland.

1,926,822. Paper Machine Drive. Carroll Stansbury, Wauwatosa, and Glendon C. Brown, Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

1,926,982. Fibrous Composition. Lester Kirschbraun, Leonia, N. J., assignor, by mesne assignments, to The Flintkote Corporation, Boston, Mass.

1,927,047. Fibrous Product and Method of Making the Same. Thomas Robinson, New York, N. Y., assignor to Lancaster Processes, Inc., Long Island City, N. Y.

1,927,359. Fibreboard and Process for Producing Same. Jacob Edge, Downingtown, Pa., assignor to Downingtown Manufacturing Company, Downingtown, Pa.

1,927,360. Board Machine. Jacob Edge, Downingtown, Pa., assignor to Downingtown Manufacturing Company, Downingtown, Pa.

1,927,361. Board Making Machine. Jacob Edge, Downingtown, Pa.

1,927,378. Apparatus for and Method of Making Fiber Board. Edward T. Street, Downingtown, Pa.

1,927,498. Belt for Fourdrinier Machines. Hamilton Lindsay, Shaker Heights, Ohio, and Edward J. Buell, Niagara Falls, N. Y., assignors to The Lindsay Wire Weaving Company, Cleveland, Ohio.

1,927,541. Process and Plant for the Manufacture of Pure Cellulose from Vegetable Fibers. Cesar Bouvier, Paris, and Georges Fouche La Fleche, and Edmond Seguin, La Courbe-le-Lude, France.

1,927,798. Insect Repellent Paper and Process for Making the Same. David C. Kinnell, Montclair, N. J., assignor to D. C. Kinnell & Co., Inc., Montclair, N. J.

1,928,045. Manufacture of Creped Paper. Edward H. Angier, Framingham, Mass.

1,928,052. Refining Engine for Use in Pulp Refining. William Groundwater Fraser, Fulham, London, England.

1,928,107. Method and Apparatus for Bringing Paper Stock Onto the Wire of a Paper-Making Machine. Richard T. Lang, Heidenheim-on-the-Brenz, Germany, assignor to American Voith Contact Company, Inc., New York, N. Y.

1,928,286. Fourdrinier Paper Machine. Rudolph C. Germanson, Appleton, Wis., assignor to Paper Patents Company, Neenah, Wis.

1,928,601. Pulper. Carl G. Muench, New Orleans, La., assignor to The Celotex Company, Chicago, Ill.

BOX MAKERS HOLD SPECIAL MEETING

More than 40 delegates from Portland, Seattle, Los Angeles, San Francisco and Oakland attended a special meeting of the Pacific Coast Paper Box Manufacturers Association at San Francisco October 9, at which J. R. Norie of the Coast Carton Co., Seattle, presided. Mr. Norie is president of the coast box organization.

It was decided at this meeting to organize two separate units within the coast body, but to keep the latter intact and operative as a trade association. One group will be the folding box manufacturers and the other will be composed of the set-up box people. Hugh Peat is secretary of both groups.

The folding box manufacturers of the coast have decided to ratify the national code of the new Folding Paper Box Association of America and the set-up people have approved the code of the National Paper Box Manufacturers Association.

Clarence B. Kerr of the Hollywood Paper Box Co. of Hollywood and Charles Rubel of the Standard Paper Box Co. of Los Angeles were appointed a committee of two to draw up a California state code under the "Little Nira" law of that state.

PULP MILLS MAY MAKE YEAST FROM WASTE SULPHITE LIQUOR

That great quantities of bakers' yeast may be made on the Pacific Coast from waste sulphite liquor, is indicated as a possibility by the visit of Gustaf Heijkenskjold, civil engineer of Djursholm, Sweden, who was on the Coast during October.

Mr. Heijkenskjold's process, on which he holds exclusive rights to the patents for the United States and Canada, utilizes the sugar content of sulphite liquor as it comes from the digesters, as nutrition for the development of the yeast organisms. It is being successfully applied in Finland by the W. Rosenlew & Co. mill, producing more than 1,000,000 lbs. of yeast annually.

Yeast is a single-cell fungus organism which, under certain favorable conditions, reproduces itself rapidly by gemmation, or cell division in which each cell divides to produce new ones. For their growth and sustenance they require carbohydrates such as sugar, as provided by sulphite liquor, and some nitrogen, phosphates, etc. When present in proper proportion the reproduction is rapid.

In making yeast from sulphite liquor, the acid liquor is neutralized after it comes from the digester, before entering the fermenting vat. Having been used at high temperature, the liquor is perfectly sterile and contains no bacteria which might produce an impure yeast, a considerable advantage over the commonly used raw materials such as grain or molasses.

After neutralization, it is passed into the fermenting vat, into which is also introduced the seed-yeast or starting material. For bakers' yeast, a pure cultivated yeast race, Saccharomyces, is used. Nitrogenous substances and phosphates, etc. are also added. The yeast absorbs the nutrition and commences to propagate, increasing in quantity five or six times.

The yeast is extracted by separation, and is washed with pure water, after which it is compressed into bricks. These are placed in cold storage at about 6 to 8 degrees C. until needed for distribution.

The remaining liquor is neutral and contains chiefly lignin, and may be easily disposed of. Thus yeast manufacture from waste sulphite liquor may be one solution to the disposal problem.

The yeast consumption of the United States and Canada is something over 200,000,000 lbs. per year. According to Mr. Heijkenskjold, a yeast plant in connection with a sulphite pulp mill, can produce 200 lbs. of yeast for each ton of pulp produced. Thus a 100-ton daily capacity mill would have sufficient waste sulphite liquor to make 20,000 lbs. of yeast per day.

A yeast plant with a capacity of 5,000,000 lbs. of yeast per year would require a capital investment of about $200,000. The cost of production is said to be 3.4c per lb., based on a plant of this size. Cost of distribution and selling is estimated to be about 2c per lb., making total actual delivered cost less than 6c per lb., which is said to be less than half the present price of bakers' yeast on the Pacific Coast.

The process is fully protected by patents all over the world. The only plant operating is that in Finland, the rights for other countries being owned by the "yeast trusts" and other interests. The method has been purchased by the leading yeast concerns in Sweden, Norway and Austria. The exclusive rights for the remainder of Europe were bought by the corporation A. B. Basta of Stockholm, Sweden. The rights for the United States and Canada remain with Mr. Heijkenskjold. He reached San Francisco early in October, later visiting in the Northwest before leaving for New York.

While no plans have been announced for the construction of such a plant on the Pacific Coast, it is understood that one of the pulp companies is considering the possibility of acquiring the rights.

B. C. FIRM NOTES GENERAL IMPROVEMENT

Both plants of the British Columbia Pulp & Paper Company, at Woodfibre and Port Alice, have been working at full capacity all this year as a result of firmer demand for pulp in all markets served by the company. B. C. Pulp & Paper also owns a mill at Swanson Bay, but this has been inactive for several years and there is no talk of resuming operations there for the time being.

The spot market for pulp has worked to higher levels, but this in itself has had little effect on the company's business, according to President Lawrence W. Killam. Most of the sales are on a contract basis, the chief markets being the Orient, United States and a few European countries.

The company will be able to make its first interest payment under the amended financing plan October 16 as a result of the general improvement in conditions. Last May a majority of the holders of the $3,321,000 outstanding 6 per cent first mortgage bonds voted approval of modifications in the trust deed whereby semi-annual installments of interest falling due in 1933 and 1934 would be postponed, to be payable in order of their maturity as and when cash available from operations should be sufficient to pay them. Sinking fund installments which fell due in 1932, 1933 and 1934 were cancelled.

It is now announced that Coupon A, representing interest which fell due on the 6 per cent mortgage sinking fund gold bonds on May 1, 1933, will be paid October 16, together with interest from May 1 at 8 per cent per annum. This payment will be made on presentation of the postponed interest coupons. By a previous agreement holders of the 7 per cent general mortgage bonds due in 1950, outstanding to the amount of $1,445,400, agreed to postponement of interest until November 1, 1934, and sinking fund until November 1, 1935.

Last year the company operated at a loss and in the early part of this year the management found it necessary to take steps to protect the company's liquid position. It was pointed out that reduction in world prices and the consequent disorganization of markets consequent upon the continued depreciation in currencies, especially in the Orient, made it advisable not to count on any great improvement. However, since that attitude was expressed, there has been a pickup in some markets and officials of the company believe the worst has been passed.

WESTMINSTER PROFITS UP

Net sales of Westminster Paper Company, whose mills are at New Westminster, B. C., were practically unchanged for the twelve months ended July 31, but gross and net profits were larger, due largely to general economies effected in operation and concentration of the sales force on the more profitable items. The company is now selling in Canada and seventeen foreign markets.

GENERAL ELECTRIC ORDERS UP

Orders received by the General Electric Company for the third quarter of 1933 amounted to $43,733,499, compared with $35,539,858 for the second quarter of this year and with $25,665,402 for the third quarter of 1932, an increase over last year of 70 per cent., President Gerard Swope announced.

For the nine months ended September 30, orders received this year amounted to $104,785,001, compared with $94,374,114 for the first nine months of 1932, an increase of 11 per cent.

EDISON COMPANIES UNDER N R A

Thomas A. Edison, Inc., of which the Edison Storage Battery Co. is a division, signed the President's Re-employment Agreement on August 4, and is operating under its provisions.

The storage battery division is part of the Electric Storage and Wet Primary Battery Industry, who have submitted a Code of Fair Competition to the NRA. Tentative approval of the labor provisions in this code was secured August 5, and the Edison company is complying with all code requirements.

CROWN WILLIAMETTE RESUMES SILTCOOS LAKE LOGGING

Logging operations in the Siltcoos Lake district in Oregon are being resumed by the Crown Willamette Paper Co. The company has operated a camp here for a number of years, shipping spruce pulp wood to its mills.

WAXED PAPER CODE HEARD

The Code of Fair Competition for the waxed paper industry has been submitted to the NRA by the American Waxed Paper Association, and hearings were held in Washington, D. C., on October 21. The association is said to represent 83.43 per cent of the total volume of the industry.

PULPWOOD TRUCKERS PROTEST LICENSE FEE

The City of Everett, Wash., recently fixed new license fees for trucks operating within the city limits, and ordered the arrest of all truck owners who did not obtain city permits as required. The pulp wood haulers who operate between outlying logging camps and Everett have vigorously protested and appear to have won their battle.

These truckmen use the city streets very little in comparison with other trucks working entirely within the city, and they felt the new fees exacted to be exhorbitant, declaring that they are paying 15 levies aside from the city fee, and pay taxes as high as $500 per year.

About 100 truckmen, bolstered by a number of business men of Everett, appeared before the city council and requested that the license fees be withdrawn. A new ordinance was drafted, making the city levy much less burdensome and giving the pulp wood haulers a chance to break even.

PAPER PRODUCTS CARLOADINGS INCREASE

Freight car requirements for paper, paper board and prepared roofing in the last quarter of 1933 show an increase of 15.1 per cent over the same period in 1932, according to estimates of the Regional Shippers' Advisory Board. Average increase for all commodities is 14.7 per cent.

All reporting board territories reported anticipated increases, no section showing any decrease. The increases in per cent are given as follows: New England Board Territory, 10; Atlantic States, 21.9; Allegheny, 14.4; Great Lakes, 15; Ohio Valley, 30.8; Mid-West, 13; Northwest, 9.9; Southeast, 7; Southwest, 10; Pacific Coast, 20; Pacific Northwest, 22.3.

UNITED STATES IMPORTS OF PULP WOOD AND WOOD PULP BY COUNTRIES OF ORIGIN

AUGUST, 1933

Compiled by the U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce
(Figures Subject to Revision.)

PULP WOOD

	Rough				Peeled				Rossed			
	Spruce		Other		Spruce		Other		Spruce		Other	
	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars
Countries—												
Sov. Rus. in Eur.	.....	.....	.....	.....	3,419	30,771	.....	.....	.....	.....	.....	.....
Canada	25,506	193,061	285	1,710	64,894	491,150	9,943	61,299	1,178	6,429	.....	.....
Newf. and Lab.	.....	.....	.....	.....	2,200	8,000	.....	.....	.....	.....	.....	.....
Total	25,506	193,061	285	1,710	70,513	529,921	9,943	61,299	1,178	6,429	.....	.....

Total Imports of Pulp Wood, August, 1933—107,425 Cords; $792,420.

WOOD PULP

	Mechanically Ground				Chemical Unbleached Sulphite		Chemical Bleached Sulphite		Chemical Unbleached Sulphate (Kraft Pulp)		Chemical Bleached Sulphate		Chemical Soda Pulp	
	Unbleached		Bleached											
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
COUNTRIES														
Czechoslovakia	.....	.....	.....	.....	1,501	48,772	1,769	63,766	.....	.....	93	4,620	.....	.....
Estonia	.....	.....	.....	.....	1,679	42,991	.....	.....	.....	.....	.....	.....	.....	.....
Finland	1,905	38,135	50	783	14,937	501,970	3,122	133,308	10,327	277,255	643	24,276	.....	.....
Germany	.....	.....	.....	.....	2,593	70,481	2,931	121,736	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	599	18,067	.....	.....	.....	.....	.....	.....	.....	.....
Norway	450	8,084	100	1,266	2,192	72,461	5,222	231,571	906	24,809	185	6,024	.....	.....
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	48	766	.....	.....	.....	.....
Sweden	675	11,961	737	13,702	32,471	940,843	8,888	363,673	45,897	1,217,368	1,253	67,809	.....	.....
Canada	15,149	270,501	.....	.....	8,184	269,033	19,136	978,684	4,832	167,808	3,664	232,248	695	24,436
Total	18,179	328,681	887	15,751	64,176	1,964,618	41,068	1,892,738	62,010	1,688,006	5,838	334,977	695	26,436

Total Imports, all Grades Wood Pulp, May, 1933—192,853 tons; $6,251,207.

HELLER & MERZ ISSUE NEW DYESTUFF DATA BOOK

A new edition of the book "Dyestuff Data for Paper Makers" has just been issued by the Heller & Merz Corp. of New York. The book has been written for the paper mill superintendent exclusively and its text is confined to the useful colors for the paper industry. In reprinting, the company has eliminated emergency and obsolete dyes, and brought forward the improved color products for paper, giving complete information on all these dyes in condensed form.

Copies will be sent to interested paper makers upon request to the company at 90 West St., New York, or to its representatives. Their Northwest representative is Wm. Marshall, Pittock Block, Portland, Ore.

EQUIPMENT MANUFACTURERS ORGANIZE NEW GROUP

The National Association of Manufacturers of Pulp and Paper Machinery and Equipment was organized at a meeting held September 28 in New York City.

The following officers were elected to serve until the annual meeting next February: President, Phillips Dennett, president of the Bird Machine Company, South Walpole, Mass.; vice-president, Charles L. Bauer, president of the Bauer Brothers Company, Springfield, Ohio; treasurer, W. B. Wilshusen, secretary of the Cameron Machine Company, Brooklyn, N. Y.

The Board of Directors in addition to the three officers are: J. E. Waterhouse, general manager, Montague Machine Co., Turners Falls, Mass.; A. B. Clark, president, J. O. Ross Engineering Corp., New York City; L. L. Foss, purchasing agent, Union Machine Co., Fitchburg, Mass.; S. G. Bevis, president of Bevis Machine Co., Middletown, Ohio; Samuel M. Langston, president of S. M. Langston Co., Camden, N. J.

The constitution and by-laws for the organization and a Code of Fair Competition were discussed and tentatively approved at the meeting for final ratification by the members. The code will be presented for the approval of the Recovery Administration at Washington as soon as possible.

PAPER MACHINE BUILDERS FILE CODE

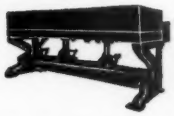
The Paper Machine Builders' Association, said to represent 100 per cent of the industry, have filed their code of fair competition under the NRA. Hearings were held in Washington, D. C., on October 12.

NEW LIGHT-DUTY COUPLING INTRODUCED

Fast's self-aligning couplings have been used for some years with uniform success on heavy duty installations in the pulp and paper industry, but only recently have they become available for light duty use at reasonable cost.

In the past the cost of manufacturing a small coupling of this type has been prohibitive, compared with the usual prices for ordinary light-duty couplings from 1-inch to 2-inch shaft diameters. However, recent experiments proved that by retaining the forged steel hubs and using die-cast sleeves of a special alloy metal, perfect operating results and dependable performance could be obtained for sizes from 1-inch to 2⅛-inch, horsepower from 2 to 15 per 100 r.p.m., and a maximum speed of 3,600 revolutions. By this method of manufacture, costs were reduced within competitive range.

Before being introduced to the market, 1,000 couplings were tested over a three-year period to demonstrate satisfactory performance.

● Why have Fibres Pass Through an *Expensive System* of Careful Stock Preparation into an *Improper Screen*—  ?

The screen can truly be called the heart of the paper making process. For upon it depends to a large extent the formation and cleanliness of sheet, regardless of how carefully the fibres have passed previous processes. That's why you should give serious consideration to screen operation. And that is why we ask you to consider only several of the many features of the Jones Screen:

.010-inch slotted plates often eliminate the need of preliminary centrifugal cleaning equipment without appreciably affecting the capacity.

Gentle vibrating action—no forcing of stock—allows passage of only clean, uniform fibres through screen slots.

Perfect screening action keeps the slots clean and permits a continuous inflow of accepted stock. Cleanliness and uniformity of the sheet are assured.

Affords most convenient accessibility — easy to clean at all times—requires little attention in its operation and maintenance.

Low power consumption — a 5 H.P. motor takes care of most stringent mill conditions. Capacities up to 6,000 pounds an hour.

THE JONES LARGE CAPACITY SCREEN

Descriptive, illustrated catalog mailed on request.

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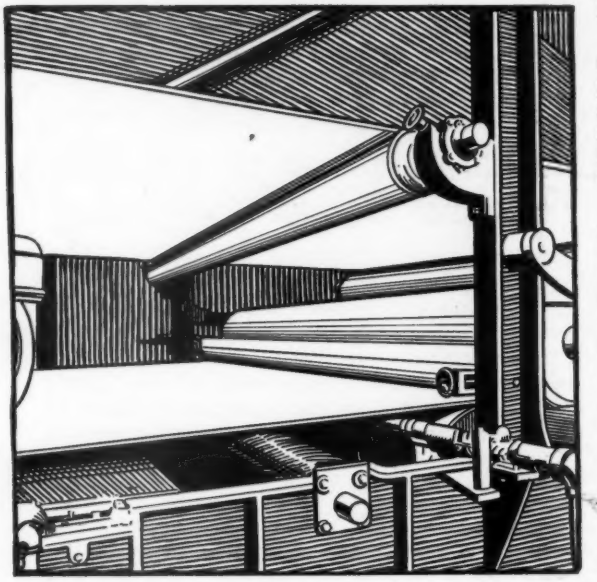
A name that has won a world-wide reputation through 75 years devoted to paper-making progress



From Vats to Winders

Nothing else on a paper machine is subjected to the punishment the felts are called upon to withstand.

No felt, however good, ever serves for any great stretch of time, although Orr Felts have demonstrated their ability to wear appreciably longer than felts they have supplanted.

Try Orrs. With them you will obtain maximum water removing service and an extra measure of endurance that will surprise you.

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PIQUA, OHIO

ORR FELTS

PACIFIC PULP EXPORTS TO JAPAN INCREASE

Reflecting the development by Pacific coast manufacturers of a market in the Far East for chemical wood pulp, particularly sulphite for rayon manufacture, a substantial increase in the American share of Japan's import trade in wood pulp occurred during the first half of 1933, according to the U. S. Department of Commerce.

Imports of pulp into Japan during the six-month period totaled 93,850 tons, compared with 72,887 tons in the first half of 1932, an increase of 28 per cent. Imports from the United States in the first half of the current year amounted to 25,342 tons, against 13,024 tons in the same time a year ago, representing a gain of almost 100 per cent. The proportion of United States wood pulp imported into Japan in the 1933 period was 27 per cent of the total imports, contrasted with 17 per cent in 1932.

Increased interest in chemical pulps produced on the Pacific Coast has been manifest recently in China, as well as Japan. Oriental importing firms' inquiries for new contacts have been more numerous and orders have been larger in volume. It is reported, in fact, that some Far Eastern importers have had considerable trouble in getting their orders filled here.

LOGGERS TO VISIT CATHLAMENT PULP WOOD CAMP

Loggers from all over the West are gathering at Portland October 25, 26 and 27 for the annual session of the Pacific Logging Congress. On October 26 they will take their customary field trip, this time to the operations of the Crown-Willamette Paper Co. at Cathlamet, Wash.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of Pacific Pulp & Paper Industry, published monthly at Seattle, Washington, for October 1, 1933.

State of Washington, County of King,—ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Lawrence K. Smith, who having been duly sworn according to law, deposes and says that he is the business manager of the Pacific Pulp & Paper Industry, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher, Consolidated Publishing Co., 71 Columbia St., Seattle, Wash.
Editor, John Easton Brown, 71 Columbia St., Seattle, Wash.
Managing editor (none).
Business manager, Lawrence K. Smith, 71 Columbia St., Seattle, Wash.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Consolidated Publishing Co., 71 Columbia St., Seattle, Wash.
Miller Freeman, Daniel L. Pratt, Lawrence K. Smith, W. E. Crosby, G. W. Cain, all of 71 Columbia St., Seattle, Wash.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

LAWRENCE K. SMITH, Business Manager.

Sworn to and subscribed before me this 19th day of September, 1933.
(Seal) RALPH H. MOULTON.
(My commission expires June 24, 1936.)